AUG. 7 1959

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

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Price 50 Cents

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Acidizing? Fracturing? Waterflooding?

GET HIGHER INJECTION RATES with LOWER PUMP PRESSURES

Case History No. 1

Area – West Texas
Formation – Ellenberger Dolomite
Depth – Below 12,000'

BEFORE VIBRO-FRAC, acidizing injection rate averaged .15 bbls. per minute at 6500 p.s.i.

VIBRO-FRAC treatment started with perforating six feet of the casing with E-Gun and three VIBRO-PERFORATOR shots. This was followed by two open hole type VIBRO-FRAC charges in a 19' section of open hole and two casing type VIBRO-FRAC charges in the six foot section of cased hole.

After VIBRO-FRAC, acidizing injection rate started at 1.9 bbls. per minute at 5800 p.s.i. The injection rate increased to 7.3 bbls. per minute and the pressure dropped to 2600 p.s.i.

Case History No. 2

Area – West Texas
Formation – Devonian Chert
Depth – Below 8,500'

BEFORE VIBRO-FRAC, this formation would not take acid in offset wells.

The twelve foot zone of interest was perforated with 72 E-Gun holes and three VIBRO-PERFORATOR shots. Three casing type VIBRO-FRAC charges were spaced in the twelve foot zone.

AFTER VIBRO-FRAC, formation took acid at the rate of 2.4 bbls. per minute at 1500 p.s.i.

Acidizing a formation can mean the difference between a commercial producer and a dry hole. But how do you acidize a formation that won't take acid?

Many formations require extremely high pump pressures. Some formations won't break down at all. For these wells pre-treatment with VIBRO-FRAC, Lane-Wells explosive well stimulation service, makes acidizing practical. Selective fracturing produced by VIBRO-FRAC treatment opens up the formation — lets the acid in to do its work.

Improved VIBRO-FRAC charges can be run without depth or pressure limitations. Ask your Lane-Wells man how VIBRO-FRAC can help you with acidizing—or any type of fluid injection problem formations.

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When E. L. Drake completed America's first oil well 100 years ago in Titusville, Pennsylvania, more than an industry was born —*an epoch was launched.* Since that eventful day, petroleum has revolutionized agriculture, industry and transportation, created great national wealth, and lifted burdens from men's backs the world over.

Yet, significant as it was, the Titusville well should not obscure an earlier event in New Haven, Connecticut. There, *men with venture capital and the courage to risk it,* first envisioned the commercial possibilities of Pennsylvania "rock oil". And, in 1858 they chartered the Seneca Oil Company, which sent Drake to prospect on its Titusville land.

Like the explorers and drillers, *the true adventurers of oil are those who venture their money.* It is they who have sustained the oil industry, the chief source of the world's energy.

In this Centennial year, Sinclair salutes those early venturers, the first stockholders of Seneca Oil Company. They were the predecessors of almost four million men and women who today own most of America's second largest industry, and who are a chief source of the new capital required by its continued growth.

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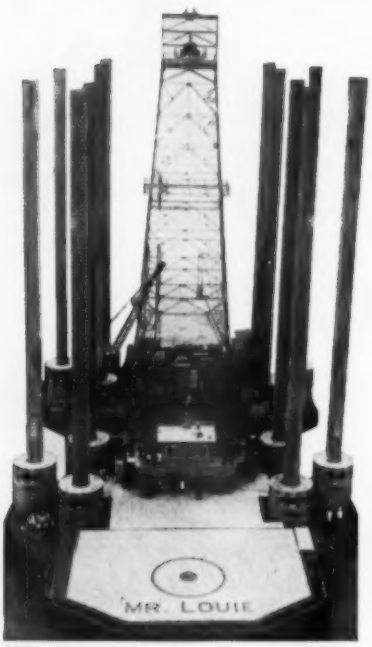
23,400 feet drilled . . . 660,000-pound hook loads handled . . . with completely trouble-free drawworks operation! That is the record of the Mid-Continent U-1220-EB Electra-Flow Drawworks on Great Western Drilling Company's Rig 44 in Pecos County, Texas.

During the drilling operation, Rig 44 set 15,849 feet of 9⅝" casing—believed to be the longest string of this size ever run. This casing string had an effective weight of 660,000 pounds, a load which the drawworks handled easily, prior to cementing.

For complete information about the U-1220-EB . . . or any Mid- Continent drawworks, contact your nearest Mid-Continent representative.



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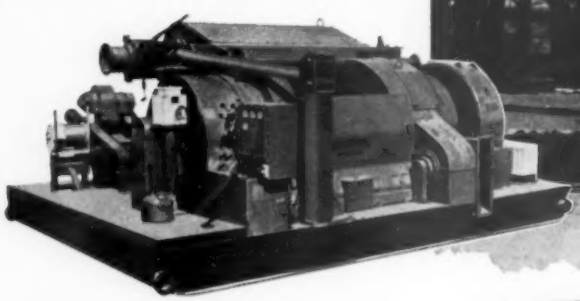
"MR. LOUIE" FEATURES U-1220-EB

Also the choice of Universal Drilling Co., a Mid-Continent U-1220-EB Drawworks was selected for their new self-elevated offshore drilling platform "Mr. Louie," recently christened at New Orleans.



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INSIDE Slant

WHICH WAY TO TURN?

It's the devil if you do, and the devil if you don't.

That is the situation the petroleum industry always finds itself in no matter what happens.

The latest example of this is the Atlantic Refining Co.'s 20c per bbl. downward adjustment in the East Texas field crude price.

We hold no brief for Atlantic or any other company which cuts the crude price, which, in our opinion, should be higher, not lower.

Just two years ago, the price of crude was advanced from 25c to 35c per bbl. This led to investigations by Congress and the Justice Dept. The result was an indictment of 29 companies.

But while these investigations were under way, downward adjustments in the crude price already had set in.

And the Atlantic adjustment was just another in the trend.

But, instead of the federal government, the attorney general of Texas stepped in this time.

He warned the industry that he'd be after it if other companies followed Atlantic's action.

So, how can one run his business when caught in such cross-fires?

LeRoy Menzing
EDITOR

PRESSURE PROBLEMS TURN TO PROFIT

Today more than ever controlled pressure is essential to efficient drilling. Mud for fast, safe penetration and gas down hole must stay in place. With Cameron controls on the job these important forces are held in accurate check to turn up a profit instead of a problem. In emergencies you have the assurance that comes with equipment which is the best of its kind. Cameron blowout preventers, valves, gauges, relief valves, and complete Christmas trees are the result of a continuous refinement in design, manufacturing, and testing facilities. Our world-wide sales representation is ready to serve you wherever you operate. To turn a pressure problem into a profit, call on Cameron.

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DEPT/Opinions

Views That Make News . . .

"I have been informed that the Military Petroleum Supply Agency is considering awarding substantial contracts for military jet engine fuels from Venezuela and Caribbean refineries for use at U.S. naval and air force installations traditionally supplied by domestic refineries.

"The quantities in these contracts far exceed authorized allocations of imported finished petroleum products under the mandatory oil import program established by the President in his Proclamation 3279, but the agency apparently has been shown a legal loophole in the Proclamation which would permit it to disregard or circumvent authorized allocations. This would be contrary to the objectives and intent of the entire oil import program and would subvert that program to the detriment of domestic oil producers and refiners."

—REESE H. TAYLOR
Chairman
Union Oil Co. of California

"In the various debates on [percentage depletion], it has been amply demonstrated that the oil industry, with the exception of a few rare individuals, does not appear to be more profitable than the average manufacturing industry.

"It is the opinion of the New England Council [composed of 3,300 business, commercial and industrial organizations and individuals] that a reduction in the depletion allowance would result in a decrease in the search for oil, reduced supplies, and higher prices for oil products."

—GARDNER A. CAVERLY
Executive vice-president
New England Council
Boston, Mass.

"The adoption by the federal government of a mandatory import program during the first quarter of 1959 has had a favorable effect upon the industry.

"As a result . . . our search for domestic oil reserves has been intensified, more people have been employed, more seismic crews are in operation, lease plays are more active, more wells have been drilled, and prices for refined products have [relatively] been more stable."

—ROLAND V. RODMAN
President
Anderson-Prichard Oil Corp.

PETROLEUM WEEK *will publish each week comments from readers on timely, pertinent subjects. Such expressions are welcome.*

Address all such correspondence to LeRoy Menzing, Editor, PETROLEUM WEEK, *330 W. 42nd St., New York 36, N.Y.*

. . . and Letters

Dear Sir:

Your article, "Marketers Puzzle Over Demand Trends" [PW—Jul.17 '59,p30)], refers to the scare tactics of the National Safety Council.

Perhaps the NSC does not intend to emphasize the theme of "stay at home or you'll be killed," but that is the message as it is received by the motoring public.

My point is this. The oil industry can, and damn sure better, present interesting education information about automobiles and driving.

As an attorney and as an enthusiastic driver, I know that fear alone doesn't make good drivers; just the opposite is true.

Ignorance breeds fear and incompetence.

There should be a source of information available to, and understandable by, everyone who drives. The truckers do a good job and, by and large, have created a positive attitude in the minds of their drivers toward the "art" of driving. A similar attitude on the part of the public generally will, in my considered opinion, result in better driving and greater safety.

I suggest that TV offers greater facilities for presenting the "opportunity to drive safely and intelligently" than any other media.

Potential hazards can be demonstrated with film clips of actual highway situations. The wrong decision and the results (no blood, please) vs. the right decision (smiling, happy faces) can be explained. The emphasis should be placed on attentiveness to, and awareness of, potentially dangerous situations.

The theme should be that happy, relaxed, knowledgeable people can avoid creating, or being caught in, accident-producing dilemmas.

They will have faced the challenge and won. This is an exhilarating experience.

DICK HANSEN
Attorney
Ryan, Sayre & Martin
Boulder, Colo.

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Wherever you see this Green and White sign, you will find a Republic Supply store ready to serve you.

Inside the store you will find a complete stock of top quality petroleum and industrial supplies and equipment. Friendly supply men who know their equipment will be happy to help you.

Next time you see the green and white Republic Supply sign, stop in and browse around. Then you'll know why we say it's a "Sure Sign of SERVICE."

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Good Wells Make Good News

Recent Treatments Engineered With the Aid of the "Frac Guide"

August 7, 1959

Fracturing is more dependable and effective than ever before -- thanks to the new "Frac Guide*" developed by Dowell. Here are results on four recent treatments that were engineered using the "Frac Guide."

- **Andrews County, West Texas** (Old Oil Well) This well was completed through perforations into the San Andres at about 4300 feet. Production had declined to 25 bopd. Dowell recommended Sandfrac* after engineering a treatment with the "Frac Guide." 25,000 gallons of refined oil carrying 63,000 pounds of sand were injected at 25 bpm. After clean-up, the well tested 107 bopd.

- **Uintah County, Utah** (Old Oil Well) Production from this well had declined to 10 bopd. The pay was the Weber sand from 4180 to 4280 feet. Dowell engineered a treatment using the "Frac Guide" and recommended Riverfrac.* 15,000 gallons of water with 23,000 pounds of sand, F.L.A.* (Fluid Loss Additive) and a silicate control agent were injected down two-inch tubing at 12 bpm. 2½ months later the well was still producing 130 bopd in an area where fractured wells usually drop off to less than 50 bopd.

- **Cowley County, Kansas** (New Oil Well) This development well was completed into a 16-foot section of the Bartlesville sand beginning at 3200 feet. The "Frac Guide" indicated the use of Sandfrac with 10,000 gallons of lease oil, a fluid loss control agent and 30,000 pounds of sand. After treatment the well tested 40 boph on a ¼-inch choke -- 400 to 800 per cent better than other fractured wells in the area.

- **Coke County, Texas** (New Oil Well) This well was completed through perforations into five sections of the Strawn between 6496 and 6628 feet. Dowell engineered a treatment with the "Frac Guide" and recommended Petrojel*. Gelled crude with a fluid loss control agent was injected in three 5000-gallon stages. 22,500 pounds of 20-40 mesh sand were used to pack the fractures created. This well produced 86 bopd on 9/64" choke with a gor of 2000. Comparable wells usually produce about 65 bopd on 9/64" choke with a gor of 3500 to 4000:1.

Take advantage of Dowell's unequalled experience in engineering treatments with the "Frac Guide." There is no additional cost. For service or detailed information, contact the Dowell office or station nearest you. There are more than 165 locations in the United States, Canada, Venezuela and Argentina. Dowell, Tulsa 1, Oklahoma.

*Dowell Trademark.

Services for the oil industry

DOWELL

DIVISION OF THE DOW CHEMICAL COMPANY

60-Second Summary / WHAT'S HAPPENING IN OIL

AT-A-GLANCE PETROLEUM WEEK Copyright

August 7, 1959

dept/INDEX

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A "numbers" game, somewhat akin to the octane race in gasoline, may be ahead for jet fuels. Engine makers want fuels of less luminosity so as not to harm metals. It could lead to tighter fuel specifications. . . . p. 11

•

The oil industry is putting more money into foreign development than all other industries combined. A survey shows oil accounts for 60% of spending abroad by U.S. firms. . . . p. 13

•

Domestic producers are concerned over the impact of foreign escalation clauses on U.S. crude prices. They feel that such tie-ins to the East Texas posting could have a bearing on downward adjustments here. . . . p. 15

•

Numerous exceptions have been filed in the Phillips' gas rate case. Phillips says the Federal Power Commission examiner's ruling constitutes a "price freeze." . . . p. 14

•

The oil industry is caught in the cross-fire of federal and state "investigations." Raising prices is wrong, say federal officials. Cutting prices is wrong, say state officials. . . . p. 3

•

There's a lot of activity in Southwest Texas, including some fast-breaking trend plays and stepped up drilling. It's one of the few relatively sparsely drilled areas left in the country. . . . p. 21

•

More dealers are moving their service station office to the pump island. It's a boost for greater pump island diversity, and represents the latest in station design. . . . p. 44

•

Electrically powered compressors have been found cheaper and more efficient in any operations test. But an adequate supply of cheap electricity nearby is needed. . . . p. 36

•

Keep an eye on the large-scale trial of bottom-hole dilution now under way in Venezuela. Mene Grande is out to cut costs of producing heavy crudes. . . . p. 46

•

A giant 40,000-lb. drill collar has passed its first drilling test. The 56-ft. long unit, 16½ in. in diameter, is designed to prevent crooked-hole drilling. . . . p. 26

•

Filtering is being improved to meet the rigid standards for jet fuel cleanliness. Entrained water is a problem in improving quality for commercial and military planes. . . . p. 40

Up to the Minute

SIGNIFICANT LATE NEWS

AT-A-GLANCE
PETROLEUM WEEK
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August 7, 1959

Cost control and increased volume are credited by Indiana Standard for its 50% boost in first-half net earnings. The second quarter was 63% above the like period of last year. Net income for the first half was $78,851,272, or $2.20 a share, vs. $52,423,067, or $1.47 a share, in 1958. Sales and operating revenues were $985,642,461 for the first six months, compared with $911,511,020.

Other newly announced first-half earnings reports include Standard Oil Co. (Ky.), up 7% with a net income of $6,743,000 vs. $6,301,000, both equal to $1.40 a share; and Signal Oil & Gas Co., $8,658,272, equal to $1 a share, vs. $8,325,589, or 96¢ a share. Ashland Oil & Refining reported June 30 quarter earnings of $3,367,624, an increase of 156% over the corresponding period of last year.

•

A blowout and fire hit the initial Persian Gulf wildcat of the Japanese-owned Arabian Oil Co. At mid-week, a Tokyo spokesman said gas and some oil were still flowing threatening destruction of the rig and platform. The blowout occurred at 1,500 ft. The well is 28 mi. offshore in 106 ft. of water.

•

The Alaskan oil and gas lease bill has cleared its final legislative hurdle. It's headed for the White House after weathering a last-minute attempt in the Senate to have it recommitted. The bill boosts federal and gas holdings in Alaska to 600,000 acres, and eliminates distinction between leases and options. Sen. Gordon Allott, Colorado Republican, tried to block Senate approval.

•

Trans-Canada Pipe Lines, Ltd., is readying its move for a foothold in the U.S. natural gas market. It is seeking a license to export gas to Minnesota, Wisconsin, Michigan and North Dakota. This was brought to light in an exhibit filed with the Federal Power Commission in connection with an import application by Midwestern Gas Transmission Co.

•

The fifth Indiana Standard refinery was hit by labor troubles this week. Independent Petroleum Workers of America, which earlier had struck the Whiting (Ind.) plant, set up a picket line at Indiana's 51,300 b/d Wood River (Ill.) refinery Wednesday.

•

Swaps and trades of imports for domestic crudes may be giving inland refiners a $75-million windfall. Oil Imports Administration experts estimate that 275,000 b/d of imports east of the Rockies are exchanged for domestic crude. Since inland refiners reportedly are picking up 80¢ per bbl. on the trades, the average profit per day for the group is $205,000.

•

One block has been withdrawn from the Aug. 11 bidding on Zone 2 leases off the Louisiana Coast. It is Block 9, Tract No. La.-529, in the East Cameron area and contains 2,500 acres.

MR. P. C. SPENCER

Chairman of the Board
Sinclair Oil Corporation

"A vital part of the oil industry . . ."

"The success of any company, large or small, is governed by its people. Our industry, above all, relies on their inquisitiveness, their ideas, their dedication.

"And this industry has offered the opportunity to exploit the ideas from which come new products and goods that enrich our lives.

"From this 'freedom to develop' atmosphere have come literally thousands of oil end-products ranging from tooth brushes and fine fabrics to tires for your car. But this is only a part of the story. We dare not overlook, nor fail to credit, the thousands of people and the many companies whose engineering and research talents have played a major part in this developmental success—those who operate behind-the-scene, so to speak—those who furnish the equipment and services to drill and produce the oil and gas.

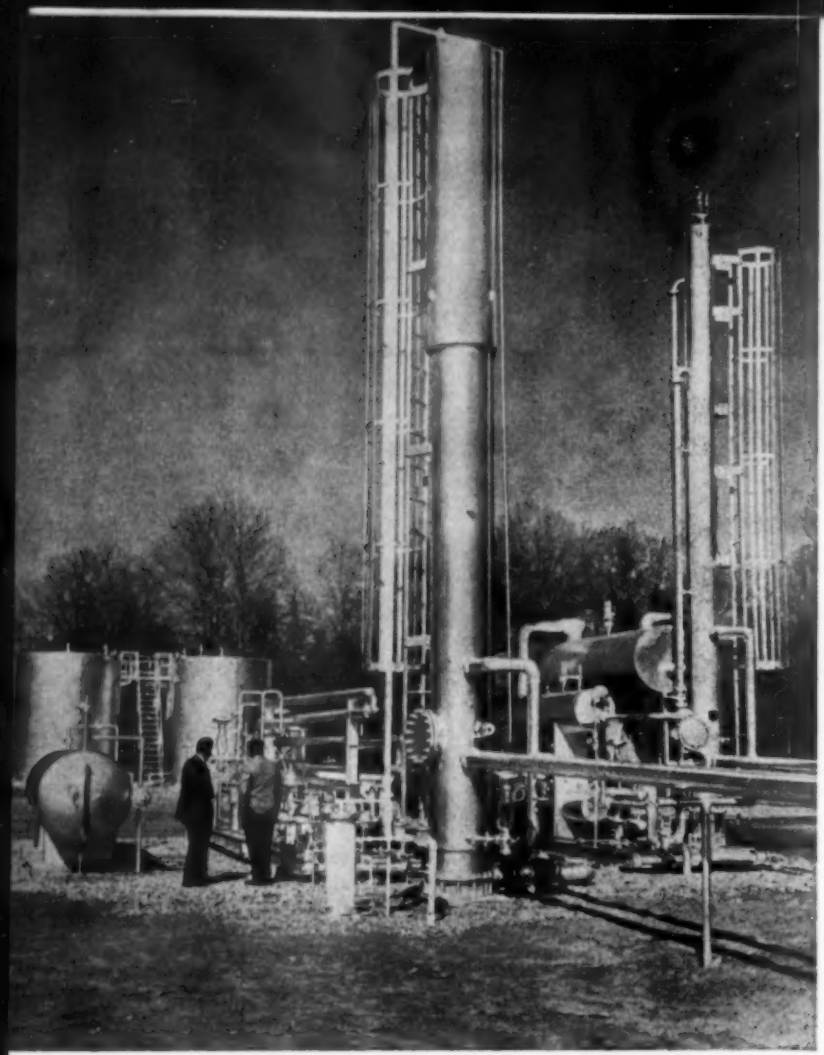
"I speak of the Manufacturing, Service, and Supply companies. A vital part of the oil industry, they provide equipment, processes, research and engineering skills that have helped make our industry what it is today . . . a free enterprise working for a better way of living for people the world over."

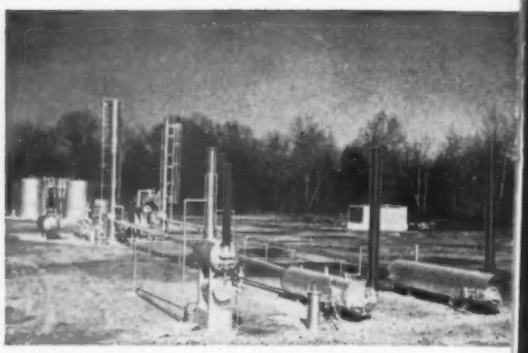
P.E.S.A.*

* PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION

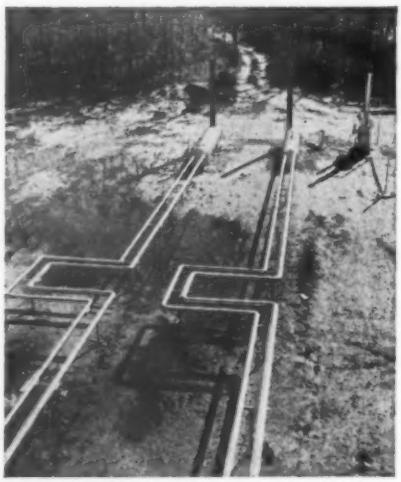
PROUD TO BE PART OF A PIONEERING INDUSTRY

PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION





BS&B "COLD-FRAC" BOOSTS CONDENSATE RECOVERY BY 39%!



This BS&B 5GDH "COLD-FRAC" with a 25-ton BS&B Ammonia Absorption Refrigeration Unit, owned by W. E. Hall, H. M. Harrell, D. B. McConnell, et al, was recently put into service at Stinson #1, Sligo Field, Bossier Parish, North Louisiana. The unit is recovering slightly more than 74.5 bbls. of condensate per MMSCF/D — an increase of over 39% from the 53.5 bbls. per MMSCF/D recovered on standard separator test.

Operating conditions are as follows:

Flow	4.7 MMSCF/D
Inlet pressure	1350#
Inlet temperature	150° F.
Sales pressure	700#
Low temperature separator	0° F.
GDH stock tank recovery	74.5 bbls. per MMSCF/D
Standard separator test (600# at 70° — stock tank recovery)	53.5 bbls. per MMSCF/D

Your nearby BS&B man will be glad to work out details with you on a similar installation tailored to your lease requirements. He reasons that profit for you is good business for him — put him on your team today!

BS&B

ANOTHER EXAMPLE OF PRODUCT LEADERSHIP

BLACK, SIVALLS & BRYSON, INC., DEPT. I-EU8 P. O. BOX 1714, OKLAHOMA CITY

'Numbers' Race May Hit Jet Fuels

Oil companies supplying commercial aviation fuels for the jet age may be headed for a "numbers" game in fuel quality similar to the gasoline octane race.

And as in the gasoline octane race, which had its start in the early postwar years, the upward push in turbine fuel quality is getting its nudge from engine manufacturers.

Automotive engine builders were striving for more and more power through a constantly rising compression ratio. Oil companies had to follow suit by making gasolines with a constantly higher octane rating to protect engines against harmful knocks.

Now jet engine manufacturers are making aircraft turbines so designed as to tax the temperature resistance of their metal components to the limit.

The problem that confronts the oil industry today is to produce a fuel that will not burn so hot as to harm the metal component parts of jet engines.

Jet fuels that have a tendency to smoke have also a highly luminous flame: It is the small particles of solid carbon from the smoke that give the flame its high luminosity.

At least one turbine engine builder, Pratt & Whitney Aircraft Division of United Aircraft Corp., is seeking a high quality fuel with no smoking tendency, therefore with a low luminosity.

To control the heat of the flame, a consequence of the smoke-forming tendency of the jet fuel, oil companies and engine manufacturers have devised a new number—the Luminometer Number (L. N.)

The Luminometer Number, originated by Pratt & Whitney, but developed cooperatively with other engine manufacturers and the oil industry, is an indication of the clearness of combustion of a fuel. It is somewhat similar to the conventional ASTM smoke lamp test and to the 16-hour lamp test, which are a part of jet engine fuel specifications. But the L. N. gives a much more reliable and reproducible figure.

It was found that certain cuts of fuels—particularly aromatics—have a poor Luminometer Number while others, mostly straight-chains hydrocarbons, burn very clearly, and have a high L. N.

The use of this L. N. as a jet fuel specification permits elimination of the conventional "polynuclear aromatic" specification, a limitation that was far from satisfactory.

To test the fuels for Luminometer Number, a new apparatus, a Luminometer, has just been devised.

The Luminometer has as its main components a thermocouple, an optical filter and a photocell. It permits the determination of the L. N. of fuels experimentally.

The formula for the determination of the Luminometer Number of a fuel is based upon the comparison, in the Luminometer, of that fuel with two other reference fuels, one with a very high L. N., isooctane, and one with a very poor L. N., tetralin.

The higher the Luminometer Number of a fuel, the lower its luminosity, and the better a jet fuel it will be. That particular quality of the fuel protection of the metal against excessive temperature—does not reflect any of the many other qualities that a good jet fuel must possess.

Jet fuels with high L. N. ratings will pose problems for processors since special refining techniques will be required and the tighter specifications restrict the volume that can be made.

The anticipated growth in jet fuel demand for military and commercial aircraft (table, below) is staggering. Those estimates of rising demand are based on the JP-4 (gasoline type) and JP-5 (distillate type) fuels now being used by the military and the turbine A (kerosine type) fuel expected to be used for most commercial planes.

To meet that type of jet and turbine fuel demand, most refiners had planned to use broader cuts from both the gasoline and distillates boiling ranges.

Meeting the L. N. requirements of commercial turbine fuel, when those specifications are established, will re-

Estimated U.S. Aviation Fuel Needs

(barrels daily)

	Jet & Turbine Fuel			
Year	Military	Commercial	Total	Gasoline, Total
1959	290,000	36,000	326,000	225,000
1960	295,000	60,000	355,000	215,000
1961	300,000	100,000	400,000	195,000
1962	310,000	130,000	440,000	175,000
1963	320,000	155,000	475,000	160,000
1964	340,000	170,000	510,000	150,000

quire a very select stream of straight-chain paraffins in the gasoline boiling range.

The present commercial jet fuel—turbine A—has an L. N. rating of between 45 and 60. At least one engine manufacturer would like to see the specification set at 50 for the present ASTM specification fuel.

After operating experience with a 50 L. N. fuel, there is talk of increasing the specification to as high as 140 or 150 L. N. for commercial turbine fuel.

The ideal fuel to satisfy the presently contemplated high L. N. specification would be a "gasoline with no front end," in the words of one process expert.

He describes it as a fuel in the gasoline boiling range, with an initial boiling point of 150F and a 90% boiling point of 400F.

The most satisfactory methods for making such a fuel, refiners say, are the relatively new processing techniques involving molecular sieves or extraction processes.

The two molecular sieve processes that have been developed within the past year are Texaco Selective Finishing and Universal Oil Products Co.'s Molex—both of which were designed to boost gasoline octanes by removing low-octane normal paraffins from gasoline streams.

Solvent extraction techniques—such as SO_2 extraction and the newer UOP Udex extraction—also are described by refiners as ideal techniques for separating out the normal paraffins from gasoline streams which result in a higher octane motor fuel component.

At present, though, there is no molecular sieve capacity on stream and relatively little extraction capacity suitable for turning out turbine fuels with a high Luminometer Number.

Texaco and Esso Standard reportedly have delivered quantities of high L. N. turbine fuel for test purposes.

Texaco also is reported to have done considerable research work with high L. N. turbine fuels in its own laboratories.

So far, though, testing of high L. N. fuels has been limited to laboratory and engine operations on the ground. But it is anticipated that full flight testing may be initiated next month.

So far the customers—the commercial airlines flying jet planes—have been cool to discussions of using high L. N. rated turbine fuels.

The main reason is that their experience with the new jet and turbojet aircraft is so short that the lines have been more concerned with other problems related to the introduction of radically different types aircraft.

Another reason is that since the high L. N. fuels would fall in the gasoline boiling range, they may likely fall into the federal fuel tax range, which amounts to a net of 2¢ a gal.

The presently used commercial turbine fuels are in the kerosine boiling range and for the moment are exempt from federal taxes, though most observers feel the exemption may not last too much longer.

Engine manufacturers, though, are trying to convince the lines of the greater economies of high L. N. fuels—more thrust, larger payloads, and longer range.

The Great Wildcatter Passes

• The daring of the unknown . . .
• The ingenuity and the hardships . . .
• The bitterness of defeat and the sweet smell of success . . .

These are the ingredients that keep a wildcatter going. These are the factors that motivate him in gambles whose costs and odds make most men shudder.

The man who made this thumbnail appraisal of the thrills and frustrations of wildcatting was the king of them all, the late Michael L. Benedum, who passed away quietly at the age of 90 in his Pittsburgh mansion last week.

A West Virginia "country boy," Benedum had spent all of his adult life in prospecting for oil. The world itself was his oyster, and he pried out many a pearl.

His remarkable vitality and his keen interest in business and philanthropic affairs—he gave away millions from his fortune estimated as high as $100-million—kept him active until last December. Then his health began to give way, and he lived almost in seclusion.

His death removed from the earthly scene the second half of the fabulous team of M. L. Benedum and J. C. Trees.

Michael L. Benedum

Benedum and Trees struck up their friendly partnership in the late 1890's. A near-unbeatable combination, fame, fortune and the reputation of being the globe's foremost wildcatters were their rewards.

Benedum is credited generally with having found more oil than any other single man in history.

His great strikes included the first producing well in Illinois in 1905; Caddo, which opened up Northern Louisiana in 1907; Tropical, which opened Colombia in 1916; and (in association with the Ohio Oil Co.), Yates, a West Texas discovery in 1926. Still others included Tuxpam, Mexico, in 1911; Desdemona, West Central Texas, in 1918; and Susan Peak, West Texas, in 1949.

Age didn't deter him. In September, 1957, at the age of 88, he established what is perhaps an all-time record for successful wildcatting when he discovered three new fields in Wyoming, Ohio, and South Texas in a single month.

His foreign interests, in addition to Latin-America, extended as far as Rumania, where he had a hand in the rich Ploesti oil field.

He was a shrewd trader and a rough-and-tumble business man—yet much of his fortune went into philanthropic endeavors.

Many millions were poured into the Claude Worthington Benedum Foundation, named for his only son who died in World War I. At his death, one-half of the remainder went into this fund.

Through the foundation, scholarships and student loan funds have been maintained at 26 colleges, and an average of 700 students have been beneficiaries of grants each year.

Although he wagered millions on wildcat ventures, gambling never played a role in his personal life.

He was a devout Methodist who neither drank nor smoked. In recent years, his associates said he relented slightly—and bet as much as 5¢ cash on the outcome of a televised fight.

Oil's Outlays Are 60% of U.S. Capital Expenditures Abroad

(millions of dollars)

	1957	1958	1959	1960
All U.S. Industry Spends Abroad	$2,504.5	$2,037.4	$2,143.6	$2,134.1
Oil's Capital Expenditures Total	1,575.1	1,275.8	1,186.5	1,245.8
In These Countries				
Canada	367.0	297.3	318.0	255.4
Latin America	908.8	477.1	412.9	498.3
Europe	239.4	384.0	344.1	433.5
Other	59.9	117.4	111.5	58.6

The lion's share, and then some, of the billions of dollars being spent in foreign areas annually by U.S. firms is coming from the oil industry.

That's borne out graphically in a survey of foreign capital investments by U.S. interests, that has just been completed by McGraw-Hill's Dept. of Economics.

The survey represents McGraw-Hill's first evaluation of the way American dollars flow abroad, and parallels the domestic analysis of capital expenditures that it has been making for a dozen years.

Companies participating in the survey represent about three-fourths of all capital expenditures overseas. No attempt was made to extrapolate the statistics to cover all foreign investment by American companies.

For the four-year period of 1957 through 1960, survey figures show that petroleum accounts for 59.8% of all foreign capital expenditures.

The statistics point up this fact dramatically. Of the $8.8-billion spent or projected in these four years, oil's share amounts to $5.2-billion.

The $1.2-billion scheduled for 1960 is 5% more than 1959, but it's still considerably below 1957's peak of $1.5-billion. The all-industry expectancy for 1960 for new plants, equipment and property overseas is 5% too.

The percentage figures are even more striking than the dollar picture (table).

In 1957, oil accounted for 62.9% of foreign capital investments; in '58, it was 62.2% and in '59, it is estimated at 55.4%. The projected figure for 1960 shows oil rebounding to 58.4%.

Closest competitors to oil, on an industrial basis, are transportation equipment, including autos, and machinery, including electrical units.

At that, though, they are hardly in the same league. In 1959, transportation equipment, even with a 92% increase over the preceding year, mustered only $209.9-million. Machinery, with an 18% boost, was only a shade behind.

Thus, in the current year, petroleum's overseas investments are almost six times greater than the next in line. The 1960 projection is almost the same with the exception that machinery is expected to jump to $251.1-million, while transportation equipment drops off moderately to $186.8-million.

Where petroleum's money is being spent is as interesting as the over-all picture.

On an aggregate basis, the biggest hunk is still going to Latin-America, primarily Venezuela.

But European investments are climbing rapidly. They've moved up from 15% in 1957, to 30.1% in 1958, to 29% in 1959 and are expected to account for 34.8% in 1960.

Conversely, Latin-American investments represented 57.7% of petroleum's total in 1957, but slumped sharply to 37.4% in 1958 when the Suez crisis was alleviated. They declined to 34.8% in 1959 but are expected to rise again to 40% next year.

Canada's participation has been relatively steady, averaging 23%.

Only three industries, excluding petroleum, top the $200-million mark in 1959 and, of these, only one expects to do it again next year.

A quick look at the expenditures for 1959 and 1960 follows, with the 1960 totals in parenthesis, and all sums in the millions of dollars:

Transportation equipment $209.9 ($186.8); machinery $208.2 ($251.1); chemicals $203.5 ($175.0); primary metals $132.6 ($96.2); rubber $69.4 ($67.3); paper $39.1 ($25.0); other metal working $33.3 ($26.3); food & beverages $31.5 ($37.2); stone, clay and glass $18.2 ($12.0); miscellaneous manufacturing, including textiles $11.4 ($11.4).

Total manufacturing investments for overseas in 1959 are estimated at $957.1-million, and in 1960 at $888.3 million versus petroleum's $1.2-billion for each year.

Exports are another story, however, where petroleum is concerned.

Oil's exports in 1959 are estimated at $447.9-million, and for 1960, at $452.4-million.

Machinery is the leader with the $2.9-billion in 1959 and slightly more than $3-billion next year.

Chemicals are next, with $1.5-billion this year and next. Electrical machinery has $1.4-billion scheduled for this year and $1.6-billion for 1960. Textiles and miscellaneous items are in that billion-and-a-half category, too.

The figures on exports, unlike those for capital expenditures, have been expanded to represent the total of commercial export sales of manufactured goods from the U.S.

The Dept. of Commerce data for 1958 were used as the base. Figures on exports excluded agricultural products, military aid, and shipments for charitable purposes.

Sales by foreign subsidiaries are growing rapidly. They're expected to be up 7% in 1959, and 9% more in 1960.

Petroleum anticipates a 4% increase in 1959. But next year, it expects an increase of 10%—one percentage point higher than the average.

NEXT WEEK in Petroleum Week

Market indications are that a new cycle of construction is about to start in the petrochemical industry.

The dramatic step-by-step rise in production facilities to meet the ever-growing demand for petrochemicals, the reasons behind that growth in the past, the present situation and predictions for the future will be reviewed in a Special Report in the August 14 issue.

Phillips Hits Natural Gas Rate Rule

Phillips Petroleum Co. this week protested that a "price freeze" will occur if the Federal Power Commission adopts Examiner Joseph Zwerdling's recommendations in its natural gas rate.

As the deadline fell for taking issue with Zwerdling, Phillips handed FPC almost 200 pages of exceptions. It dissented on 134 separate points. Ten other exceptions were filed by seven companies, two states and the FPC staff.

Zwerdling four months ago recommended that Phillips be allowed to increase its annual gas rates by about $14-million—some $35-million less than the company sought (PW—Apr. 10'59,p9).

The examiner proposed a utility-type cost-of-service method for figuring Phillips' rate, but applied some major limitations on what could be included in costs.

Phillips accused Zwerdling of freezing prices on future sales "without any knowledge whatever of the circumstances which may surround those sales."

The producing company maintained that FPC does not have the right to fix future prices and, even if it did, such action would be impracticable.

"With Phillips' future prices frozen, there could be little competition among interstate pipelines for Phillips' gas," the company said.

"The determination of what pipeline might buy each new volume of Phillips' gas might easily be a matter which would have to be determined by some sort of allocation by the commission."

Phillips also took issue with any attempt to apply its rate case to all producers.

There has been general speculation that Zwerdling's approach, if adopted, might set the pattern for future producer rate cases.

Zwerdling had said: "Phillips has not at any time taken the position that the cost-of-service method . . . is unworkable or that it presents unduly complex problems."

The company replied: "Phillips took no position as to workability of cost of service for the industry generally."

Major differences between Phillips and the examiner came on cost determination, income tax, and rate of return.

Phillips said Zwerdling used a "one-shot" method of dividing exploration costs between oil and gas. And the company thinks the shot was a bad one. It wants 62% of the joint exploration costs allocated to gas. Zwerdling had recommended 30.5%.

The examiner had refused to allow Phillips to compute its taxes—as part of its total costs—without first deducting percentage depletion and intangible drilling costs.

Phillips argued that it should be allowed to retain the deductions. The company also asked FPC to approve a rate of return of 12%. Zwerdling has recommended 9.5%.

Phillips agreed with the examiner on one major point: that its cost of service should be determined on an over-all, company-wide basis. This would include its wholly owned subsidiaries. But Phillips differed on how to assign costs to natural gasoline plants.

Under Phillips' proposed findings by FPC, the company would get from 16.5¢ to 22.75¢ per Mcf. for gas. Zwerdling would give the company an average of 11.7¢. In Phillips view, the company should be free to file for further increases when needed.

FPC's staff wants to re-open the Phillips record and consider fixing rates on a producer-area basis.

The staff exceptions challenged Zwerling's refusal of the area pricing method, and sought also to reduce Phillips' costs further.

As the first complete jurisdictional cost-of-service study of a major producer to come before FPC, the Phillips case attracted a number of intervenors.

El Paso Natural Gas Co. and two California utilities want FPC to ban spiral escalation clauses in Phillips' sales contracts.

El Paso, a major purchaser of gas from Phillips, said the examiner erred by not determining the issue of escalation.

The commission, El Paso argued, had instructed Zwerdling to rule on the escalation issue when one of the Phillips-to-El Paso rates was joined to the present proceeding.

El Paso also maintained that the

Boxscore of Oil's 1959 Earnings

(in thousands of dollars)

Company	First Quarter Net Income	% Change 1959-1958	First Half Net Income	% Change 1959-1958
Anderson-Prichard	$ 1,347	+104.4%	$ 3,044	+121.6
Arkansas Fuel	1,899	— 17.6	3,029	— 8.8
Atlantic Refining	11,902	+341.6%	16,400	+113.9
Buckeye Pipe Line	987	+ 34.1%	1,680	+ 31.2
California Standard	57,597	+ 0.3	118,153	+ 1.2
Cities Service	13,661	+ 1.2	18,904	+ 4.6
Commonwealth Oil Ref.	14	.....	(578)	.....
Continental	14,400	+ 34.6	29,160	+ 41.0
Creole	68,400	+ 5.2	115,500	— 1.5
Gulf	66,673	+ 9.9	141,814	+ 22.0
International Petroleum	.....	.....	10,000	+ 12.2
Jersey Standard	167,000	+ 14.4	315,000	+ 27.0
Ohio Oil	10,198	+ 21.9	18,556	+ 23.0
Plymouth Oil	1,526	+ 75.4	2,184	+ 44.0
Phillips	25,833	+ 25.9	53,209	+ 46.0
Shell	34,467	+ 13.0	69,187	+ 28.4
Sinclair	17,184	+ 12.9	27,032	+ 20.9
Sinclair Ven.	3,895	— 5.7	6,182	— 28.5
Socony Mobil	45,200	+ 22.5	77,100	+ 22.4
Sun Oil	11,227	+ 81.8	21,974	+ 90.1
Sunray	9,743	+ 0.9	19,936	+ 3.6
Texaco	91,220	+ 30.3	162,723	+ 17.5
Texaco Canada	2,633	+ 19.0	4,818	+ 12.0
Texas Pacific	2,021	+ 35.1	3,642	+ 54.8
Union Oil	4,890	+ 11.3	10,772	— 6.0

commission ordered the examiner to determine whether Phillips' rates constituted unilateral action within the meaning of the U.S. Supreme Court ruling in the Mobile case.

El Paso contended that escalation clauses are "so ambiguous in language and so inflationary as to contravene the public interest and to conflict with the regulatory powers of the commission."

Zwerdling had dismissed the escalation issue as irrelevant since Phillips' rates were being fixed solely on the basis of system-wide costs.

Southern California Gas Co. and Southern Counties Gas Co. supported El Paso's attack on escalation clauses.

The California companies agreed with the "end result" of Zwerdling's ruling, however, and suggested that the commission use his over-all cost-of-service approach as a point of departure for fixing rates. But El Paso and the California companies asked that area rates be fixed.

Northern Natural Gas Co. and Permian Basin Pipeline Co. argued against a rate increase for Phillips, saying the company is "financially healthy."

Two northern states—Michigan and Wisconsin—backed Zwerdling's decision in most respects.

Wisconsin said the whole course of the Phillips case "should lay to rest permanently any doubts which the commission may have entertained that a public utility cost approach to the problem of natural gas producer rates is impracticable and unworkable."

Do Tie-Ins Hit U.S. Crude?

Producers are beginning to wonder if foreign oil agreements of U.S. oil companies are having a bearing on the downward adjustment in domestic crude prices.

This line of thinking has been evident ever since Atlantic Refining Co. cut its East Texas field price posting 20¢ a bbl. on July 20 (PW—Jul.24'59, p13).

The East Texas field price long has been the benchmark for some foreign royalty payments, agreements for purchase of foreign crude as well as various domestic contracts on crude and product prices.

This means that as the East Texas price fluctuates upward or downward, the price of foreign crude under some contracts is adjusted accordingly.

The monetary realization from such fluctuations, particularly when they are downward, can be tremendous. It has been learned that one company could effect a saving of approximately $1-million annually, under its contract to purchase foreign oil, if it were to meet the East Texas cut.

It is for this reason that the domestic producer feels he is being made a victim of the tie-in between the East Texas price and some foreign purchase contracts.

It is a little hard for him to understand why he should be punished, financially, simply because the terms of a contract make it advantageous to cut domestic prices.

He realizes that some domestic crude prices may be slightly overpriced from a refinery realization standpoint.

But, at the same time, the independent producer feels that the cost of finding and producing a barrel of crude also must be considered.

Adding to the woes of the domestic producer has been the refinery strikes which have resulted in purchaser-proration.

Indiana Standard and its affiliates have four plants on strike. Largest of these is Standard's refinery at Whiting, Ind. (PW—July.31'59,p. 14).

Because of these strikes, the company has been restricting purchases for some time.

Effective Aug. 1, Indiana Oil Purchasing Co., purchasing affiliate of Indiana Standard, cut its purchases of Oklahoma, Kansas, parts of West Texas and in the Rocky Mountain area by 20% to 80%.

But, at the same time, the firm resumed 100% purchases of coastal crudes in Texas and Louisiana. This crude will go to an affiliate, American Oil Co. at its Texas City refinery.

The company purchased only 70% of normal purchases during July.

Indiana Oil Purchasing will continue to take only 10% of normal purchases in southern Arkansas and Northern Louisiana.

These restricted purchases are the result of the strike at American Oil's El Dorado, Ark., refinery.

Partial operation by supervisory and technical personnel is under way at all of the struck refineries.

Indiana Standard also reports that its product pipe lines and lake tankers have been operating at normal rates during the strike.

The Oklahoma's Corporation Commission took no cognizance of the strikes in setting its allowable for August and September.

The allowable was left unchanged from July at 525,000 b/d.

The commission also decreed that overproduction from July will be "frozen".

One cheering note from the strikes has been a stronger gasoline market.

This is particularly true in the Upper Midwest and Midcontinent. In the past week, Chicago and Oklahoma gasoline prices have increased 0.5¢ a gal. at the wholesale level.

The Gulf Coast prices also are steady, with no signs of a late season weakening.

Venezuela Pushes Unit Operation

Venezuela's efforts to encourage unitization and pool operating agreements are beginning to take shape.

Oil Minister Juan Perez Alfonzo has already told PETROLEUM WEEK that the government has a hand in some unitization projects. But he did not make it clear how hard the government is pushing them.

Shell, San Jacinto, Creole, and Mene Grande are negotiating a pool operating agreement for two Lake Maracaibo reservoirs on adjoining acreage in the southwest Bachaquero area.

The four companies set up an engineering committee to study the reservoirs in the lower Lagunillas and Laguna sands. But operations will be maintained by each company on a "pool" agreement—rather than a unitized operation.

This project appears to be further along than the mid lake north Lama project which the government recently announced involving Shell, Sun Oil, Superior, and Creole (PW—Jul.26'59,p47). However, it may be some time before negotiations start at the management levels on equities and other arrangements.

There are more than 100 wells now producing more than 150,000 b/d from the two reservoirs.

The government can exert pressure to speed negotiations through such means as controls on gas-oil ratios and well permits.

This project, however, like most similar projects in eastern Venezuela, was initiated by the companies. The government is taking a direct hand, however, in some other negotiations. And in a few cases, preliminary talks have been started at government request.

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What's New / IN THE INDUSTRY

Texas will soon be getting its second, third, and fourth quadruple well completions. The Texas Railroad Commission has approved Humble Oil & Refining Co.'s plans for two quadruple completions from four oil zones in the North Alazan field, and one quadruple completion from four gas zones in the Stratton field—both in Kleberg County. The only quadruple completion already approved is Magnolia Petroleum's No. 8 Santa Cruz Farms in the San Carlos field, Hidalgo County.

•

The Ministry of Mines & Hydrocarbons is showing concern over reports that Venezuelan crude is being sold at a discount in Canada. The coordinating Commission for Conservation & Marketing of Hydrocarbons is now investigating reports that Ontario refiners have been offered Venezuelan crude at lower delivered prices than for western Canadian crude. The commission says it is against such a sale because (1) it dislocates natural markets for Canadian crude and (2) it lowers the profit of the Venezuelan company making the sale.

•

Esso Standard has set up a Public Affairs Committee. It's composed of four top executives, with George A. Lloyd, assistant manager of public relations, as coordinator. He will work with field and headquarters units to develop a new company approach to public affairs. Committee members are R. H. Scholl, vice-president and director; E. B. Paust, general counsel; J. N. Gorringe, employee relations manager, and B. F. Meglaughlin, public relations manager.

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A severance beneficiary tax on natural gas won out over a producer tax in Texas. The legislature in its third special session finally adopted a 1.5% levy on the "first purchaser" of natural gas.

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Middle States Petroleum Corp., owned 97% by Tennessee Gas Transmission Co., will be merged into the parent company. Under the terms of the merger, minority stockholders in Middle States will receive cash for their shares.

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A Union Oil Co. of California test off the Louisiana coast blew out last weekend with the expected total loss of a $1.5-million rig. The blowout on well No. 23, state lease 2826, Caillou Island area, and a subsequent fire killed three men and injured five. Gravey-Hellums Drilling Co. of Houston is the contractor.

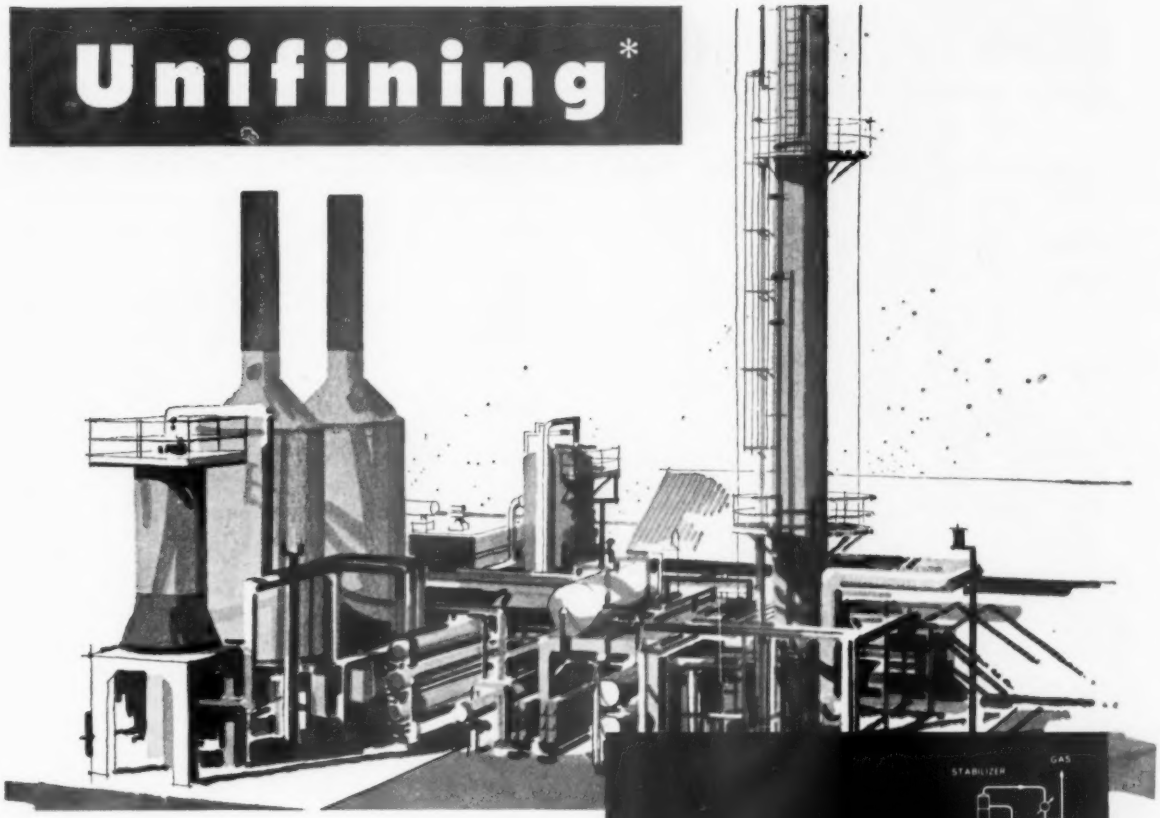
•

"Colonel" Edwin L. Drake, the father of the oil industry, may become a real colonel. Four Pennsylvania state senators are jointly sponsoring a bill to bestow the posthumous rank of colonel in the Pennsylvania National Guard upon Drake. Drake's unofficial rank was granted by a friend one year before Drake struck oil with the nation's first successful well.

•

The nation's newest helium plant began operations this week. The $12-million extraction plant built by Flour Corp. at Keyes, Okla., for the Bureau of Mines is designed to process 290-million cu. ft. of helium annually.

Unifining*



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Looking Ahead in Washington

McGraw-Hill
Washington
Bureau
August 7, 1959

Federal office buildings throughout the U. S. are using more oil and gas, less coal. In fiscal year 1958, the General Services Administration made heating changes in 110 separate projects. Of that number, 46 were conversions from coal to either oil or gas. The remainder were changes from hand to automatic stoking of coal. In fiscal year 1959, ended last June 30, GSA programmed 151 heating conversions. Final figures are not in, but about one-third of the changes are expected to favor petroleum. GSA regulations require the use of the "most economical fuel" in federal buildings.

•

The Military Petroleum Supply Agency is experimenting with electronic computers to speed up bid processing. MPSA is renting computer time from other Defense Dept. agencies to see if the machines can reduce the amount of time spent evaluating bids. Present methods frequently require up to 100 days to determine low bidders. MPSA wants to cut this time lag sharply. But congressional critics (PW—Jul.25'59,p17) still think MPSA's big problem is the complexity of contracts and bids. The lawmakers, however, put the blame for MPSA's problems on the lack of cooperation by the individual services—not the single-manager concept under which MPSA buys petroleum for all military agencies.

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Activity at the Federal Power Commission will slow down this month. August is the traditional vacation month at FPC, and no hearings will be held unless an emergency requirement can be shown.

One victim of the slowdown is Midwestern Gas Transmission Co. Midwestern is proposing a new natural gas pipeline in the Upper Midwest to bring Canadian gas into the U. S. (page 39). FPC Examiner Emery J. Woodall started hearings on Midwestern's application, but refused to hear the case during August. Hearings will resume in early September. But Midwestern had hoped to get a certificate by Nov. 1—a date which now looks unlikely. Woodall, in opening the Midwestern hearings, threw a scare into the company when he asked about an export license from Canada. Midwestern hopes to get FPC approval for its project contingent upon the license, which the company does not yet have. But the examiner is not expected to decline the project because of the lack of a license. The full commission already has indicated support for the Midwestern application to import Canadian natural gas.

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Don't write off the possibility of a higher federal gasoline tax yet. Opponents of the tax increase won a major victory last week when the House Ways & Means Committee voted to finance the Interstate Highway deficit through bonds instead of more user taxation. But even if the House passes the bond measure, the Senate and the White House still must act.

•

The Interstate Oil Compact received final congressional approval for another four-year extension with a minimum of fuss. The compact, which was first approved in 1935, has been a sore point with some oil-consuming state congressmen who on occasions have challenged the conservation values of the compact.

PENNSYLVANIA'S
OIL CENTENNIAL
MAGIC CIRCLE
Union City
89
27
62
8
Meadville
27
322
Titusville
Petroleum Center
Pithole
Oil City
Franklin
78
62
8
THE FAMOUS DRAKE WELL, birthplace of the oil industry, is now part of Drake Well Memorial Park in Titusville, which also includes the Drake Museum. Seeing your local history is part of the magic that's all around you—any time you pick up a map and start driving.
OIL CREEK, the shallow but vital waterway of the area, was used in the boom days to transport oil to market by horse-drawn flatboat. Today, streams like this are more noted for scenic drives, but as you drive along the banks, think of the history that's lurking there.
ONE OF THE OLDEST PRODUCING OIL WELLS can be seen at Oil City. Called "McClintock No. 1," it was drilled in August, 1861, and is still producing today. In your own Magic Circle, there are also "oldest of its kind" discoveries all around you.
THE STATELY HOMES of early oil men are still to be seen—like "the old McKinney Place" in Titusville. And when you drive by such a landmark, anywhere, the fun is in knowing what once happened there—and seeing what it looks like now.
Reprinted from Life, Look, Saturday Evening Post... where it works to increase your service station sales.

On August 27, 1859, a man named Drake drilled the first oil well in the United States—and quickly turned this quiet section around Titusville, Pennsylvania, into a roaring area of colorful boom towns. And here, the Petroleum Industry was born.

Today, the mementos of those times make this area an "Oil Centennial Magic Circle"—and a perfect example of the kind of thing you can find in your own area. Because all around you, anywhere you live, there's a "Magic Circle" full of fascinating things to see and do by car.

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Southwest Texas Is Stirring Again

A series of fast-breaking trend plays, some significant tests, and stepped-up drilling activity make Southwest Texas an oil province worth watching.

The testing and drilling range all the way from the shallow to very deep, and the formations attracting most attention run the scale from Lower Tertiary to Lower Cretaceous.

There doesn't seem to be any specific reason for the quickening tempo of activity other than the fact that, as one major company geologist puts it: "It's just that the time has come for people to get active around here. People are keeping a close eye on it, like any other relatively sparsely drilled area, because there aren't too many like it left in this country."

Just what will come of the new interest is anybody's guess at this stage, but it's quite clear that some of the recent discoveries have whetted the interest of outsiders as well as that of operators who have been fairly active in the region.

The current play has this paradoxical twist: Some majors and independents who were inactive in the area are now moving in strongly; some who had been very active are now holding back.

A geologist for one major in the latter category describes his company's attitude as "mildly cool" at this point. The exploration manager for the same company adds: "Overall, the area doesn't look tremendously attractive."

A chief geologist for another major counters: "We think there is a good potential there, with a lot of prospective targets."

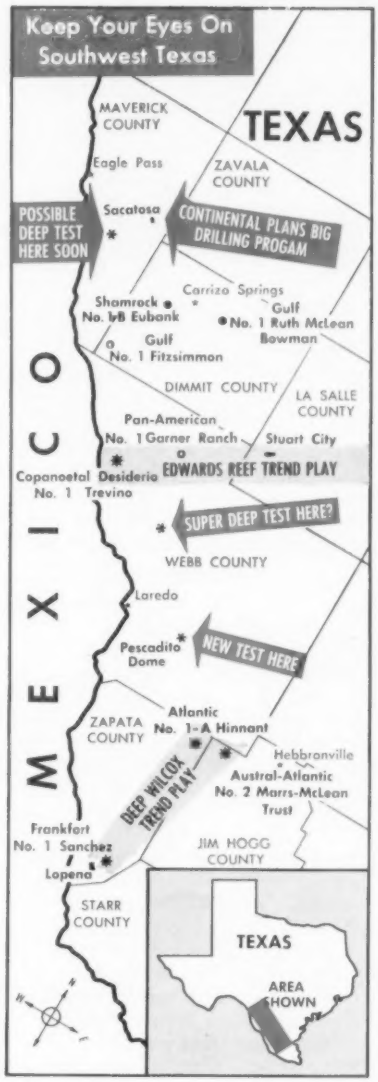
Regardless of who is right, activity definitely is picking up.

Conoco Plans 300 Holes in Maverick County

Continental Oil Co. is planning the largest single drilling program in the area—an effort that may hit a 300-hole total in Maverick County.

The company holds a 145,000-acre lease on the vast Chittim Ranch on which it found San Miguel production in its Sacatosa field several years ago (PW—Apr.25'58,p36).

Low permeability, however, has made commercial production a tough problem. Now, after extensive research work, Continental believes it has the solution.



Based on that, the company is undertaking an extensive development and extension program in Sacatosa.

Continental currently is working on the first phase of the program—some 60 holes by the end of this year.

Continental has drilled seven tests since the latter part of May and probably will step up the rate in the next few weeks.

If its calculations pan out—and a number of tests under actual field conditions have worked out extremely well, so far—the company intends to go ahead on the bigger program, looking toward the 300-hole total.

Two Gas Discoveries Open Hot Trend Play

Austral Oil Co. and Atlantic Refining Co. have opened up a hot trend play with two gas discoveries.

As one chief geologist with another company puts it, the discoveries add up to "the hottest thing in Texas right now."

Atlantic first brought in No. 1-A Hinnant, Zapata County.

Then, late in June, Austral hit with No. 2 Marrs McLean Trust, Jim Hogg County, 7 mi. east of the Atlantic discovery.

Both wells produce from the same sand—the lower Wilcox—but from different structures.

The two gas discoveries are forcing a revaluation of previous concepts. Reason: The wells hit pay deeper and farther downtrend than many people had figured possible.

Prior to these tests, the possibilities of the deep Wilcox in the area weren't considered favorable.

Austral's No. 2 Marrs McLean Trust was the real eye-opener.

The well was perforated at 9,510-63 ft. and tested through a ¼-in. choke. Pressure built up to 1,000 psi. in 1 minute, 2,000 psi. in 5 minutes, and 4,800 psi. in 10 minutes.

Gas reached the surface in 20 minutes and flowed at 4,700 psi. for 65 minutes. Initial bottomhole flowing pressure was 6,545 psi.; final bottomhole flowing pressure was 6,605 psi.; and shut-in bottomhole pressure was 6,835 psi.

Open-flow capacity was calculated at 80-million cf/d, with a condensate content of 1.3 bbl. per million cu. ft.

Sonic log indications are that the sand's lowest porosity is 18%, highest is 26%, and the average, 22%.

The well is 75% Austral and 25% Atlantic. It is located on a 3,280-acre block, a portion of which is held on the same 75-25 basis, and the remainder on a 50-50 basis. Atlantic has 100% of surrounding acreage.

The two wells have set up a trend at least 50 mi. long and some 10 mi. to 12 mi. wide.

The Austral well topped the deep Wilcox at about 9,500 ft. and the Atlantic well topped it at about 9,200 ft.

Far to the south, in Zapata County, Lopena field produces from this pay,

which is topped there at about 9,600 ft. So the two wells set up a logical trend between their locations and Lopena field.

(Frankfort Oil Co. No. 1 Sanchez was completed on this trend north of Lopena at 7,940-50 ft., with a potential of 4.5-million cf/d of gas and a gas-oil ratio of 28,000:1. Condensate is 59-gravity.)

Summing up the situation, one geologist involved in the play says:

"There had been disappointment around here in the Wilcox. Either it was not present or had unfavorable reservoir characteristics. Now people are turning back to look it over more carefully.

"It's going to be highly competitive —and too darned quick."

But locating good prospective Wilcox structures on the trend won't be easy.

An Austral source points out:

"Wilcox formations aren't reflected in the upper formations. There is very little subsurface control because most of the earlier wells were too shallow."

The No. 2 Marrs McLean Trust was located on the basis of subsurface information gleaned from a dry hole about 2,500 ft. east of it and a consequent re-interpretation of seismic data.

Baffling Pescadito Dome Is Being Tested Again

Near Laredo, in Webb County, Ginther, Warren & Co. has just spudded in for a new try at testing the Pescadito Dome.

The new effort is on the southwest flank of the big structure. The test is planned initially as a 7,500-ft. Wilcox try, but the main objective is to test out a new evaluation of the structure and its possibilities.

So the program is subject to change as drilling progresses and could develop into another deep test.

The fact is that, despite two expensive deep tests, the Pescadito hasn't actually been probed for what is thought to be its most favorable prospective pay zone—the Georgetown-Edwards-Glen Rose complex.

Ginther Warren et al have two commercial gas wells on the dome—the 1-B and 1-C O. W. Killam, each of which is about a 1-million cf/d gas producer from the Wilcox.

But the first deep test, the No. 1 O. W. Killam, hit upon salt at about 15,000 ft., and its successor, the 1-A, was abandoned at 19,503 ft. (PW—Oct.10'58,p26).

Ginther Warren was shooting at

CONOCO RIG, one of several used in big development program at Sacatosa.

the Georgetown-Edwards-Glen Rose on both tests, primarily at the Edwards.

But due to highly unusual conditions, the holes missed the target.

Lack of previous reliable subsurface information led, first, to formation correlation difficulties.

The situation is described by a geologist directly concerned as having "a hell of a significance on future development" in the area.

An 800-ft. section of limestone was identified in the two deep tests as the Georgetown formation. Now it is believed that the section actually was Austin Chalk.

The new conclusion was reached as a result of identification of a "definite marker," the Del Rio, at 16,333-454 ft. in the 1-A.

At least six different paleontologists agree on the Del Rio identification—but, as one source comments, "everybody was lost" below that marker. "They knew they were looking at much older beds, but they couldn't identify them," he adds.

It is fairly well agreed now that the hole was in the Hosston formation at total depth, indicating that the 1-A had cut two major faults which, in turn, had cut out virtually all of the Georgetown, Edwards, and Glen Rose.

"To sum it up," a Ginther Warren spokesman says, "after drilling two deep tests, we have not really tested any of the three formations. They were faulted out in the 1-A because it hit the salt."

Ginther Warren now thinks it has some of the key clues to solution of the Pescadito riddle, thanks to a new and extensive geophysical survey.

The Houston operator has had the area surveyed, utilizing the variable density profile method, to produce what is hoped to be a more accurate picture of the subsurface beds and the courses they take.

This survey:

(1) Showed that the two deep tests were located in a relatively unfavorable position.

(2) Confirmed the faulting out of the Georgetown-Edwards-Glen Rose in the 1-A. If the venture had been located just ¼ mi. from its site, it would have tested the complex.

(3) Indicated strongly that there are numerous prospective untested segments on the dome, on all flanks, considerably higher than those that were drilled.

One of the more remarkable facets lit up by the survey is a highly unusual rim syncline situation. It seems to be the reverse of the usual salt dome pattern.

The syncline rim is 5½ mi. west of the No. 1 O. W. Killam on the Wilcox formation, only 3 mi. west on the Navarro formation, and only 1½ mi. west on the deeper formations.

Normally, the rim syncline moves away from the dome at depth. The survey shows, however, that it does just the reverse at Pescadito, those studying the conditions are convinced.

They believe this is the explanation:

The dome started growing in about Georgetown time, developing a radial fault pattern. There was then a period of tremendous erosion, followed by an enormous fill-in of Taylor shale, then another levelling off.

The dome then appears to have started growing again in Taylor-Navarro-Wilcox time.

This means—the theory goes—that there is a different structure on the Navarro and Wilcox than on the Georgetown-Edwards-Glen Rose complex. And the formations in the complex are very difficult to separate out from each other.

"Primarily, it is now a paleontology problem designed to pin down the stratigraphy," says a spokesman.

Deep Test in Webb County Also Planned

Meanwhile, another deep test by Hunt Oil Co. seems probable north of Pescadito.

Hunt's No. 1 J. O. Walker has been projected as a 9,000-ft. Webb County wildcat, almost due north of Laredo and about 27 mi. southeast of Encinal, LaSalle County.

Hunt, however, has moved in a heavy rig with a capacity for much

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Quaker Thermoid floating ship-to-shore rig helps speed oil storage for new arctic air base

Increased air traffic over the polar route has called for an immense new airfield and oil-piping system at Frobisher Bay, Baffin Island, just completed by Foundation Company of Canada Limited.

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deeper drilling. Industry sources say they believe the hole will probably be carried to the 19,000-20,000-ft. range —much deeper than the presently announced depth target.

These sources, who are watching all developments in the area very closely, believe this will be another effort to develop Edwards production on a reef trend running generally southeast from McMullen County and across LaSalle and Webb Counties to the Rio Grande.

Other Significant Tests Are Under Way, Too

Elsewhere, scattered across the province, there are additional significant developments. Copano Oil Co., for example, is planning at least a 15-hole program on a big farmout from Pan American Petroleum Corp.

The San Antonio firm is taking the Pan Am farmout on a 15-mi. wide strip along the Edwards reef trend.

Copano will drill 10 wildcats and 5 development wells under the agreement.

Copano has been doing considerable drilling on its own in the area, attempting to unravel the Edwards reef problem.

About 40 mi. northwest of Pescadito, Copano recently completed No. 1 Desiderio Trevino as an Edwards gas well just below 9,000 ft. The well flowed 2.7-million cf/d of gas.

Both Dimmit and Maverick Counties are experiencing additional strong plays.

Shamrock Oil & Gas Corp. is negotiating for a 10-year, 25,000-acre lease, carrying a $6-per-acre bonus price, in Maverick County.

The acreage isn't far from Continental's current drilling activity.

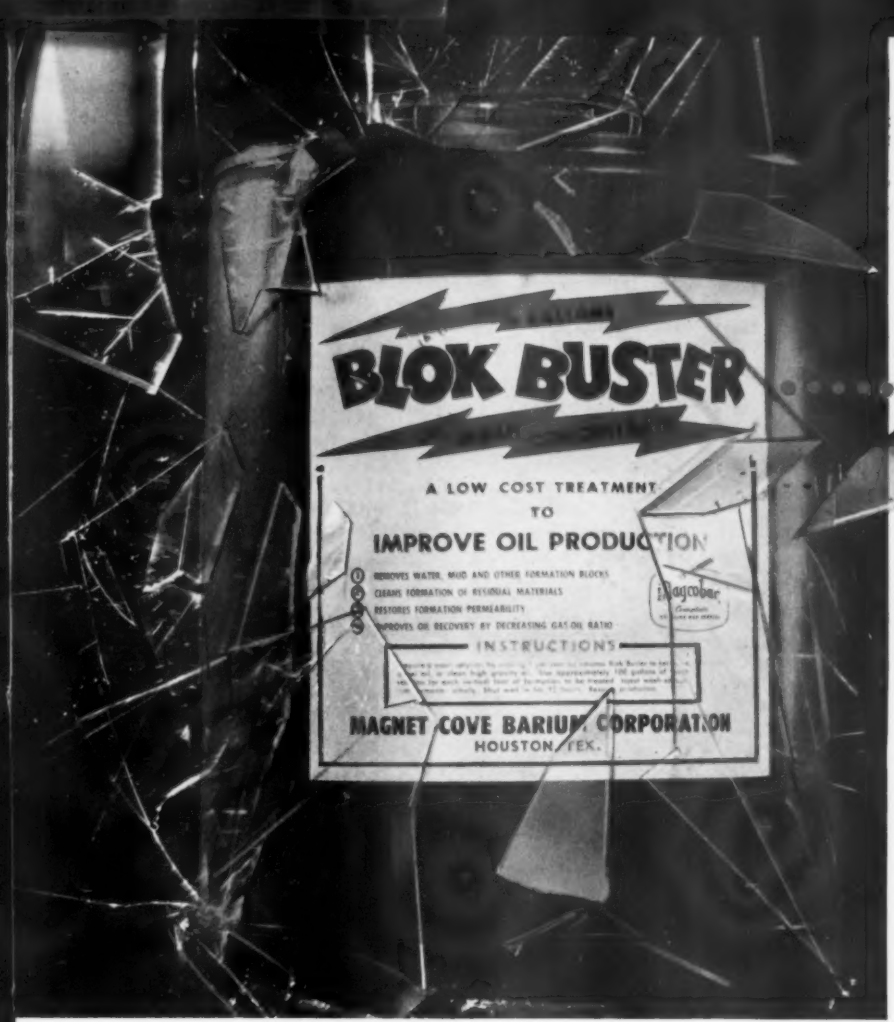
Shamrock said its leasing move was prompted by its oil discovery, the No. 1-B Eubank, in the Olmos formation, in Dimmit County.

C. C. Winn, San Antonio independent, is conducting a series of core tests of the San Miguel in Maverick County and will drill an Edwards test this year.

T. G. Shaw, Ft. Worth independent, has scheduled ten Buda tests in the middle of the county.

W. J. Steeger, Houston independent, now is drilling the first of five planned Maverick wildcats 14 mi. northeast of Eagle Pass. All are slated as 2,500-ft. Austin Chalk ventures on a 5,800-acre farmout from Lion Oil Co.

At least two major companies are checking out the possibilities of initiat-



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Originally produced 10 BOPD from Dakota "J" sands. After a 10-gal. Blok Buster treatment, production was increased to 43 BOPD and is still pumping 36 BOPD five months later.

Well did not resume normal production after workover

Well producing 1 MMCF gas and 30 to 35 bbl. distillate per day from Frio was killed. Following workover, the distillate production was lost. After a 5-gal. Blok Buster treatment, production was increased to 1.5 MMCF and 11 to 14 bbl. distillate per day. Two months later this production is still holding.

Well did not increase following hydraulic fracturing

Well had average production of 5 BOPD and 20 bbl. water. Following fracturing operation, well produced exactly same. Using 35 gal. Blok Buster, production after 21 days was increased to 16 bbl. oil and 11 bbl. water per day.

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ing some type of fireflood recovery in the county.

And one major company is reported reliably to be blocking up considerable acreage in the south part of Dimmit County, offering as high as $25 to $30 per acre bonuses.

One of the largest Houston independents also is becoming interested in Maverick County possibilities.

One of the big reasons for the Dimmit County interest is a Gulf Oil Corp. test in the southwest part of the county.

Gulf's No. 1 Fitzsimmons was projected to the Sligo, but tests in that zone were unsatisfactory and the wildcat was plugged back for tests in the Austin Chalk.

The wildcat flowed some oil from this Upper Cretaceous zone and then "went dead." Gulf is now preparing to install a pump.

As it looks now, everything below the Austin Chalk seems nonproductive. But this test, and another that Gulf completed recently in the Austin Chalk, won't necessarily condemn the lower horizons in this area.

Gulf, in fact, is rigging up to drill another test in the northeast part of the county. This wildcat probably will be carried to the Glen Rose, Lower Cretaceous.

There had been some hope, however, that the Sligo might prove fruitful. The Sligo, one of the members of the Glen Rose, has been awakening some interest in a wide band through the province. But it is still a relatively unknown quantity.

Gulf's recent Austin Chalk completion—the No. 1 Ruth McLean Bowman—is located 10 mi. east of Carrizo Springs. (Gulf holds a 75% interest, with Carl McCabe and Jack Bowman, both of San Antonio, holding the remainder.)

The well flowed at the rate of 140 b/d of 34.4-gravity crude through a 14/64-in. choke and perforations at 5,804-22 ft. Gulf also is reportedly planning a Webb County Wilcox test.

Biggest Drill Collar Passes Test

What is believed to be the biggest drill collar ever used anywhere has just passed its first drilling test in Canada.

The giant drill collar was used by General Petroleums Drilling Co., Ltd., to drill a Home Oil Co. wildcat at Marble Mountain, 25 mi. west of Sundre.

The 600-ft. surface hole went down almost completely vertical and at final depth the hole showed only ⅞ of a degree deviation.

The huge collar is 16½ in. in diameter, is 56 ft. long, and weighs almost 40,000 lb.

With the special tools required to handle it, the collar cost about $25,000.

Before the new collar was built, the largest in use by the petroleum industry was a 12-in. size made in the U.S. for export. And the largest ever put into operation on the North American continent, as far as is known, is a 11¼-in. size used by Shell Oil Co. at Jumping Pound in 1953.

The 11¼-in. collar weighed 300 lb. per ft., compared with the 700 lb. per ft. for the new collar.

The extremely large and heavy drill collar was designed to prevent crooked surface-hole drilling in the tough Alberta foothills.

Much greater rigidity is obtained by use of large-diameter collars. This rigidity is needed to prevent even the slightest bending of the collar. Such bending causes the bit to take the path of least resistance away from the vertical, where formations are not horizontal.

Stiffness rises in proportion to the fourth power of the diameter. Thus, a 16½-in. collar is about 4½ times as rigid as a 12-in. collar. This extra rigidity enables the operator to vary his bottomhole weight more effectively and so keep the hole straighter while making better time.

HUGE DRILL COLLAR towers over crew of General Petroleums rig in Canada.

CLOSEUP shows construction details of the 16½-in. diameter drill collar.

Cody R. Spencer, president of General Petroleums, says "the use of supersized collars to get straighter surface holes has been talked about in Alberta ever since Turner Valley days.

"Each time the diameter has been increased, better results have been obtained.

"It was this fact, plus the advice of local drilling engineers, that encouraged General Petroleums to take a $25,000 gamble on the collar. We are very happy with the results to date."

Spencer says the new collar also should cut drilling time for surface holes in the foothills area.

The collar was made in three pieces by National Supply Co. in its Torrance (Calif.) plant.

This plant has made big gun barrels for the U.S. military and so was equipped to handle the forging and machining of the big collar.

A special high-alloy steel was used for the collar. Special threads had to be devised by Hughes Tool Co., and gauges manufactured for this thread. Special facilities for machining the collar also were engineered.

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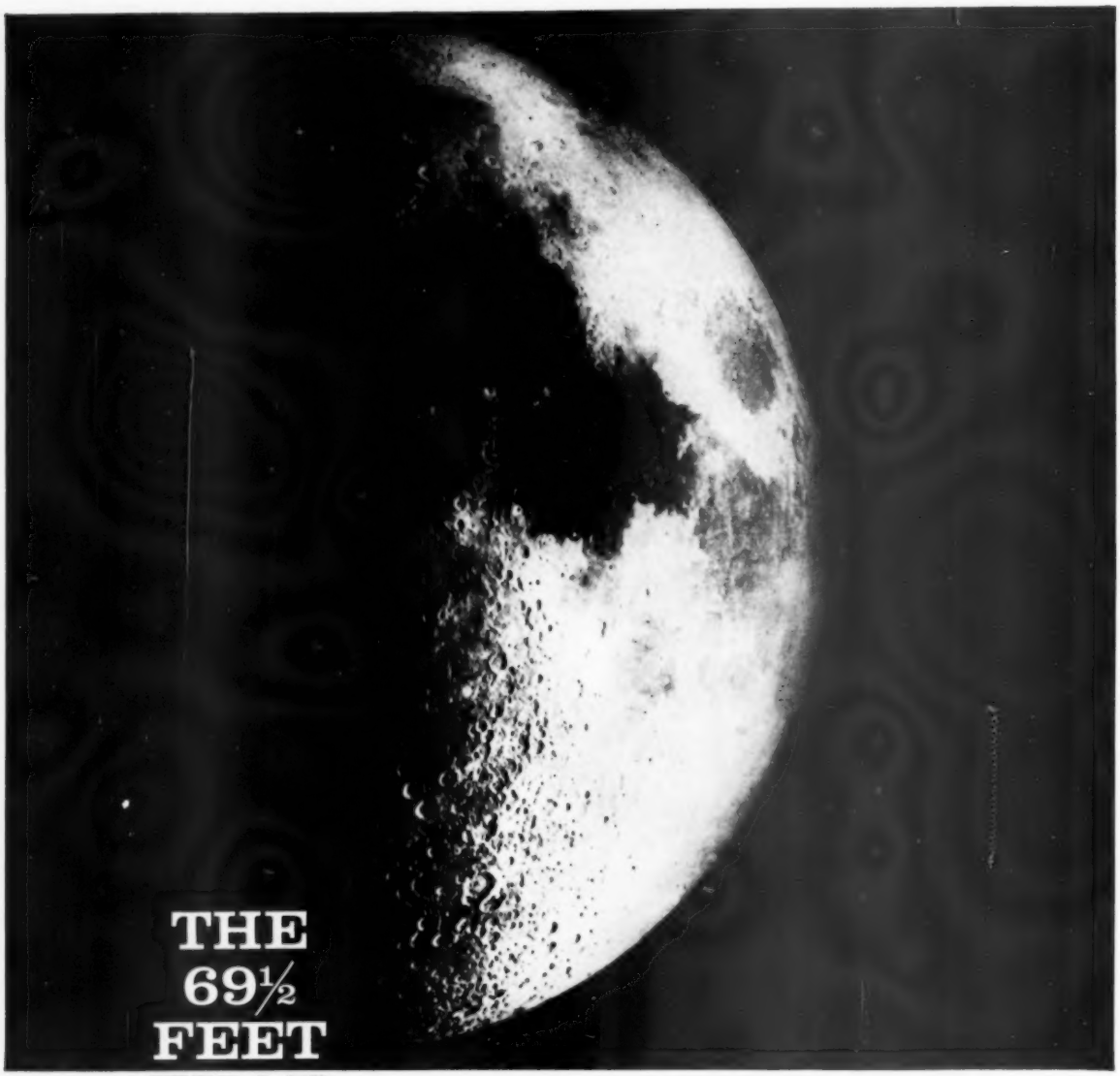

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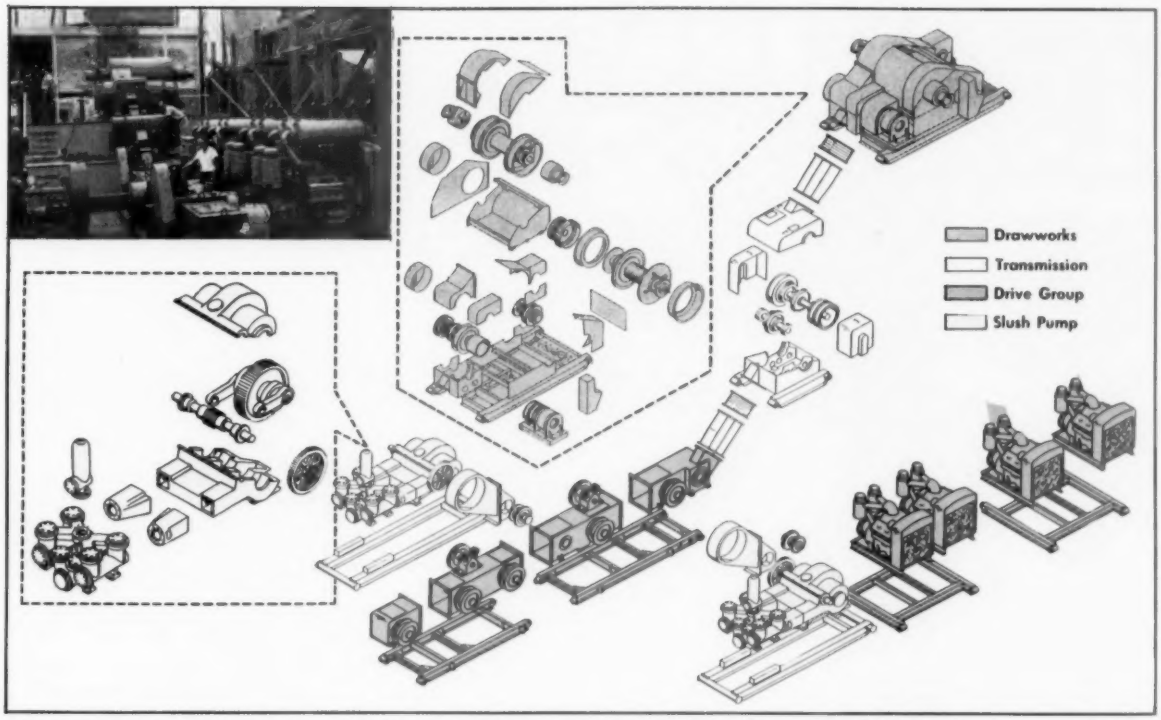
Standard Oil Company (New Jersey) Esso



EXPLODED VIEW of National Supply's Type 4-10 Helicopter Rig, showing how it is disassembled for easy transport. This . . .

Helicopter Rig Has Top Portability

National Supply Co. has just released full details on how its new Type 4-10 Helicopter Rig is broken down for easy transport by air, sea, or land.

The new rig—first ever designed specifically for helicopter lift—was unveiled at the recent oil equipment show in Tulsa (PW—May15'59,p31).

But onlookers weren't able to determine clearly just how the rig was broken down, since only the assembled unit was shown. National has now come up with a 24-page illustrated booklet with details on operation and exploded views showing how the rig is disassembled.

The rig can be disassembled easily into components or sub-assemblies weighing less than 4,000 lb. each.

These components are light enough for aerial transport by helicopter or cargo transport aircraft; for overland transport by light truck or track-type vehicles; or for water transport by light boats or barges.

Where conditions permit carrying larger or heavier loads, disassembly can be arranged to suit such conditions.

The rig is designed to overcome the transportation barriers that formerly kept operators from exploring and developing remote or inaccessible areas showing geologic promise.

The helicopter rig, which can be used for drilling to 10,000 ft., is engineered for easy assembly and disassembly without loss of strength.

The main frame is fitted with bolt-secured V-slot fasteners which speed assembly and automatically secure positive alignment.

A company spokesman says that not a single shrink or press fit is disturbed during the various stages of rig-up or disassembly.

The drawworks frame is sectionalized at the drumshaft centerline, permitting removal of the upper section, complete with sand reel or catshaft, to make the drumshaft assembly and brake accessible. These can then be lifted out easily.

The drawworks is mounted on a one-piece skid base for strength and rigidity.

The engine clutch drum is bearing-mounted on the compound shaft extension, assuring permanent clutch and drum alignment. This allows use of universal joints between the engines and compound, eliminating need for precise alignment.

Long chain drives are eliminated by a transmission that is mounted independently between the engines and drawworks.

Accordion-type rubber diaphragms connect the compound-to-transmission and transmission-to-drawworks chain guards, making exact field alignment of these guards unnecessary. This also permits flexibility of substructure height.

The drive group is a combination made up of four General Motors 8V-71 engines, equipped with Allison TC-850 torque converters. These power the rotary, drawworks, and two National C-150-B slush pumps. Other engines within the weight limitation and with a combined rating of 600 hp. to 1,000 hp. can be used with the new rig.

Standard universal joints permit rapid assembly and disassembly, and minimize misalignment problems between the engines and compounds, and between engines and pumps.

The Type 4-10 Helicopter Rig can be converted to a conventional rig.

This is done by extending the drawworks skid and mounting the transmission upon it at the same level as the drawworks, and by building new skids for the engines and compounds, at the same height as the drawworks skids. These modifications can be done in the field.

Many of the parts are interchangeable with those used on other National rigs.

What's New / IN EXPLORATION, DRILLING, PRODUCTION

Exploration on Upswing In Pacific Northwest

Exploratory activity is picking up again in the Pacific Northwest.

One wildcat is currently under way in Washington, and three new ones are planned, two in Washington and one in Oregon.

The active test is Tideland Oil & Gas Co. No. 7-11 Tideland-Weyerhauser, section 7-11n-10w, in the Long Island area, Pacific County. At last reports, the test was drilling below 5,565 ft. Tideland plans to drill No. 1 Stearnsville, section 23-20n-12w, Grays Harbor County, Wash., as a 6,000-6,500 ft. test.

The other two tests scheduled are Ross Mitchell & Associates No. 1 Bliven, section 15-8s-5w, Polk County, Ore., and Shell Oil Co.'s No. 1 Sturdevant, section 27-12n-2w, Lewis County, Wash., a stratigraphic test.

Only present production in the two states is from Ocean City field, Grays Harbor County, Wash. Discovery of the one-well field—which produces an average 15 b/d—two years ago touched off predictions of a boom which still remain unfulfilled.

•

Texas Allocation Formula Upheld in Court Suit

The Texas Railroad Commission's allocation formula—based on one-third well and two-thirds acreage—has withstood another court test.

A District Court judge in Austin has ruled that Pan American Petroleum Corp. and Humble Oil & Refining Co. waited too long before filing a suit against the commission.

The case grew out of completion of a dual gas well by W. A. Moncrief, Jr., of Ft. Worth, on a five-acre tract in the Emperior Ellenburger and Devonian area of Winkler County, West Texas. The companies filed suit to test both the allocation formula and ratable-take regulations of the commission.

•

Lease Sales Set

Three big sales of oil and gas leases will be held Aug. 18, Sept. 10, and Sept. 23, in Montana, Wyoming, and New Mexico, respectively.

A total of 38,886 acres, in 88 parcels, will be offered in the Montana sale, at Helena, in what is expected to be the biggest state sale of the year so far.

The Wyoming sale, at Fort Washakie, involves 15,804 acres, in 48 tracts, of Wind River Indian reservation lands, all in Fremont County.

Tribal and allotted lands of the Acoma and Laguna Pueblos will be offered in the New Mexico sale, at Albuquerque, which involves 46,830 acres in 85 tracts, all in Valencia County.

•

Sinclair Oil & Gas Co. has purchased Eastland Oil Co., Ft. Worth independent, through an exchange of stock.

Eastland assets include producing properties on 67 leases in 16 counties in West Texas and in one county in New Mexico. The leases total about 5,600 net acres, on which are located some 150 net producing oil and gas wells.

Current daily net production is 1,600 b/d of oil and 3-million cf/d of gas.

Also included in the sale are 500 net acres of undeveloped leases in West Texas and 4,400 net acres in Mississippi.

Ute Indians Offer Road Right-of-Way

A highway "bottleneck" in the Four Corners area may soon be broken.

The Ute Tribal Council has offered to sell a right-of-way to Colorado for a connecting link in the Navajo Trail in southwest Colorado.

The right-of-way is located 5 mi. north of the Colorado-New Mexico line on a route from U.S. 66 at Shiprock, N.M., to Aneth.

Paul Jones, chairman of the Navajo Tribal Council, supports the action and recommends that Utah consider construction of a highway from the new San Juan River bridge to connect with the projected highway at the Utah-Colorado border.

A helicopter crash in which one man was killed has marred General Petroleum Corp.'s wildcat venture near Becharof Lake, Alaska (PW—Jul.17'59,p17).

Gilbert Frick, 61-year-old drilling foreman from Huntington Park, Calif., was killed July 25 when the helicopter was flipped over by a wind gust during a landing attempt. The aircraft caught fire on impact but three other employees escaped.

•

The first sale of Navajo lands on the basis of a fixed bonus and competitive bidding on royalty rates has been tagged a success.

Interior Undersecretary Elmer F. Bennett gave this opinion last week following bids on 16 tracts totaling 2,491 acres in the Aneth area. A total of 21 tracts covering 3,291 acres were offered, at a flat $500 per acre bonus plus royalty.

Helbing & Podpechan, of Dallas, set an apparent leasing precedent for the Rockies by bidding 77.1% royalty, plus the bonus, for a 160-acre tract in section 36-40s-24e. The bids ranged downward to 17⅓%.

•

The Texas Railroad Commission has been asked to approve waterflood and pressure maintenance units in Montague County, North Texas, and in Coleman County, West Central Texas.

Texaco, Inc., asked authority to institute a unitized waterflood for the Milham sand in the Milham Unit A, Montague County Regular field. There are 32 wells producing from the 388-acre reservoir, of which 238 acres are to be flooded, leading to an estimated additional recovery of about 1-million bbl. of oil.

Several field operators have joined in the request for the pressure maintenance project for Warner (lower Gardner sand) field in Coleman County. The unitized area includes 14 oil wells and 389 productive acres. It's estimated that pressure maintenance will lead to production of 1,607,500 additional bbl. of oil.

•

Lee Brown Drilling Co. of Midland, Tex., has sold all of its physical

A HIP POCKET is handy but it CAN'T HOLD AN INDUSTRY

In almost every industry, during times when supply can more than meet demand, there comes into being a rash of pseudo businesses whose foundations are built solely on the soft sands of opportunism*. The term "Hip Pocket" has become the common denominator for members of this group.

Such firms are mushrooming almost daily in the Supply Industry and they are weakening the structure of your only dependable source of supply and service.

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*Webster defines opportunism as "a taking advantage of circumstances with little regard for principles or ultimate consequences."

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assets—including three rotary rigs—to Lucey Products Corp., of Tulsa.

A spokesman says Lucey would follow its usual practice in such transactions and resell the equipment and other assets.

•

Union Oil Co. of California has acquired varying amounts and types of interests in 37,400 acres in Texas and New Mexico from Paul Moss, of Odessa.

The purchase price and other details have not been disclosed. It's estimated the transaction will increase Union's reserves by 12-million bbl. of crude.

The properties include 750 b/d from working interests and 750 b/d from royalty and mineral interests from a total of 428 wells.

•

Imperial Oil Ltd. led bidding in the July 28 sale of Alberta oil and gas drilling reservations with an offer of $605,702 for three parcels.

A total of 77,000 acres were sold, for a total of $849,809. Imperial's bids covered two 12,000-acre parcels in the foothills west of Rocky Mountain House and one 10,000-acre parcel at Jumping Pound.

•

Mandrel Industries, Inc., of Houston has purchased Well Instrument Developing Co., of Houston.

WIDCO's facilities and personnel will be integrated with Mandrel's Electro-Technical Labs Division in Houston. WIDCO manufactures well-logging equipment and instrumentation.

•

Engineering

An oil-well control valve that is said to eliminate stuffing-box burnout, gas lock, and other production problems, has been introduced by V-line Mfg. Co., Inc.

The V-line back-pressure control valve is installed in the flow line to hold back pressure on the tubing. It is a spring-loaded ball-and-seat type valve that is stem-regulated by a screw mechanism.

•

Drilling Highlights

Utah—Standard Oil Co. of California, Western Operations, Inc. No. 1 Uintah-Ouray, section 5-1n-2w, Duchesne County, in the Starr Flat area, was completed for 350 b/d of 40-gravity oil through three perforated intervals between 10,000-12,000 ft. in the Greenriver-Wasatch. The discovery, on Uintah and Ouray Indian Reservation, is 6 mi. north of Bluebell gas field. It is the first producer on the north side of the Uinta Basin.

West Texas—Texas Pacific Coal & Oil Co. No. 1-B O. H. McAlister, section 41, block 37, T-1S, T&P survey, Midland County, flowed 355.5 bbl. of 54-gravity condensate in 21 hours through 17/64-in. choke and perforations at 11,368-432 ft. in the Devonian. Gas volume was 1,508,000 cf/d. The wildcat tested 454,000 cf/d of gas and 34.1 b/d of 57-gravity condensate on earlier test of the Strawn through perforations at 10,-354-64 ft. The dual prospect is 1½ mi. southwest of the one-well Germania Devonian field.

Alaska—Standard Oil Co. of California and Richfield Oil Corp. No. 14-15 Swanson River Unit, section 16-8n-9w, Kenai Peninsula, was completed for 100 b/d of an estimated 30-gravity oil at about 11,460 ft. The well is 1½ mi. southwest of the discovery completed two years ago and is the third success in the unit.

New Mexico—J. C. Williamson and Ross Brunner No. 1 White Ranch, section 1-12s-28e, Chaves County, was completed as a Devonian discovery, flowing 389 b/d of 45.5-gravity oil through 20/64-in. choke and open hole at 8,128-40 ft. The strike is 4 mi. west of White Ranch pool.

East Texas—Harris R. Fender & Associates No. 1 Houston County Timber Co., G. Gonzales survey, Houston County, flowed 23-million cf/d of gas on open flow plus 25.5 bbl. of condensate per million cu. ft. through perforations at 7,837-39 ft. in the Woodbine. The discovery is 5 mi. southwest of Kennard townsite.

Oklahoma—Pan American Petroleum Corp. No. 1 Phillips Unit, section 15-24n-24w, Ellis County, was dually completed for 16-million cf/d of gas through perforations in the Morrow at 7,653-57 ft., and for 3,650,000 cf/d of gas and 34 b/d of oil through perforations at 7,835-39 ft. in the Tonkawa. The dual discovery is 3 mi. northwest of North Salon field.

Wyoming—Sohio Petroleum Co. No. 1 Government, section 27-41n-81w, Johnson County, flowed 105 b/d of oil through perforations at 2,243-55 ft. in the Tensleep. The discovery is 2 mi. southeast of Tisdale field.

August 27, 1959—Oil's 100th Birthday

A Great Day for Every Oil Man and Woman

100 years ago Colonel Edwin L. Drake drilled the first commercially successful oil well.

Of all the many uses for petroleum during the past century—as an illuminant, a lubricant, a source of chemicals—its most important use has been *as a source of abundant, low-cost energy.*

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Every oil man and woman shares a quiet pride in the progress of our first century—and confidence in our ability to meet the challenges of the second.

As we look ahead to our second century, we join all other American business and industry in giving thanks for America's unique climate of freedom—from which all *past* success has come . . . on which all *future* success depends.

Committee on Public Affairs
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Electric Compressors Prove Reliability

Electrically-powered compressors have sent costs down and brought efficiency up during three years of operation on Texas Eastern Transmission Corp.'s main natural gas transmission system.

The company, reporting last week on the results of three years of heavy-duty field operation, says that the compressors have proven their economy, efficiency, and reliability.

The compressors are being used at three of Texas Eastern's stations to pump gas through its main 30-in. line from East Texas to New York. All are in areas of low-cost electric power.

One of the three stations is the Mt. Pleasant installation near Columbia, in Giles County, Tenn., which moves about 1.1-billion cf/d of gas, receiving it at about 750 psi. and boosting it to approximately 900 psi.

One of the two electrically-driven single-stage DeLaval centrifugal compressors at this station has been in operation since 1956. The second was put in operation in December of last year.

Texas Eastern says that performance of the compressors has shown doubts about their reliability to be unfounded. "We have found that an electrically-driven station is perfectly reliable," says a Texas Eastern spokesman.

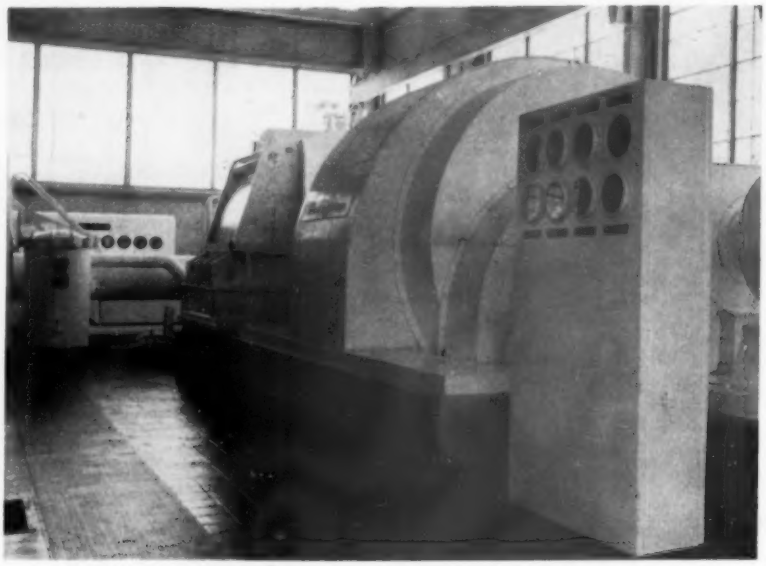
"During the period of time this station has been in operation with the two units, it has compiled an enviable record of on-line time of 99.3% of potential hours."

(This compares favorably with the company's estimated "availability" factor of about 96% for a gas turbine drive and of about 90% to 95% for a reciprocating engine drive compressor.)

The Mt. Pleasant installation contains two 15,000 hp. Westinghouse synchronous electric motors—the largest in natural gas transmission service. Each motor drives a compressor through a Westinghouse speed increaser, which boosts rpms from 900 to 6,506. This increase represents a ratio of 7,229-to-1.

And the cost per hp. installed, at the same time, is substantially lower than in other types of compressor stations.

At Mt. Pleasant, total cost per hp. installed is $117.27. The cost of the station itself, including the second compressor added in 1958, came to $3,518,000.



ELECTRICALLY-DRIVEN compressors at Texas Eastern's Mt. Pleasant (Tenn.) station.

The cost of gas turbine driven station of comparable hp., Texas Eastern says, would be just over $6-million, or about $202.76 per hp. installed. A comparable station operating with reciprocating engine drive would run approximately $250 per hp. installed.

The saving is simply explained: Use of electrically-powered compressors permits concentration of great power in an installation of a relatively small size.

Each compressor room is only 62 ft. by 28 ft., with a 20 ft., 8 in. eave height. The control room, sandwiched between them measures 31 ft., 6 in., by 15 ft., 2 in., with an eave height of 11 ft.

And no basement is required, as in other type stations.

The electrically-driven station yields still other savings.

Maintenance costs are very low. As one official puts it, "You just turn it on and let it run."

Because of the high degree of automation incorporated in the station design and the negligible amount of maintenance required for the units, the number of personnel employed to operate the station can be kept at a bare minimum.

For the Mt. Pleasant station there is one chief operator, four operators (one for each 8-hr. shift), one relief operator, one mechanic's helper, and one maintenance man.

But an electrically-driven station can't be operated successfully everywhere: An adequate quantity of comparatively cheap electric power is needed.

Texas Eastern gets its power from Tennessee Valley Authority's main transmission lines for all, except emergency, requirements.

TVA supplies the power at 161,000 volts, 3 phase. Each 15,000 hp. compressor prime mover operates at 4,160 volts, 3 phase.

The average rate charged for power is 4½ mills for kilowatt hr.

"We think this is the way to pump gas—provided you can get an adequate amount of cheap power," says a company spokesman.

If the necessary electric power isn't available at an economic rate, Texas Eastern believes that the gas turbine is the answer to compressor station power.

An outstanding example of this kind of operation is the company's Clinton (Miss.) station, north of Jackson.

The four 7,600-hp. General Electric two-shaft regenerative cycle gas turbines at this station are among the biggest two-shaft installations in natural gas transmission use. Each drives a single-stage Clark centrifugal compressor.

But this station needs a 14-man crew for operation and maintenance, says the company.

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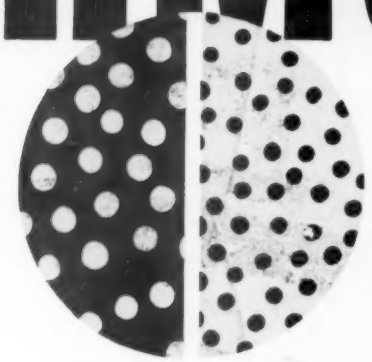

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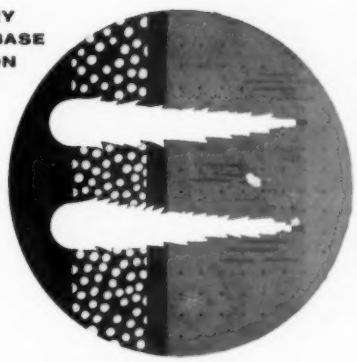

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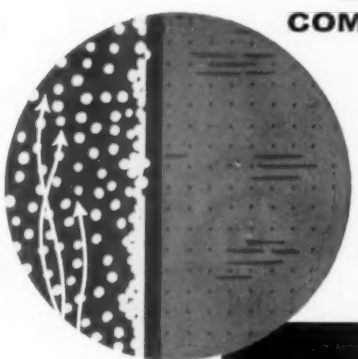

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GENERAL WHOLESALE DEPARTMENT

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Upper Midwest Gas Needs Cited

Midwestern Gas Transmission Co. and Michigan Wisconsin Pipe Line Co. are pressing for early Federal Power Commission approval of their plan to import Canadian gas for the Upper Midwest.

In hearings last week, they testified that urgent customer needs for increased supplies call for quick issuance of certificates of public convenience and necessity.

Midwestern's plan, a modified version of earlier proposals (PW—Jul.24 '59,p34), includes a 504-mi. pipeline from Emerson, Manitoba, to Marshfield, Wis., to cost about $52-million. Gas would be supplied by Trans-Canada Pipe Lines, of which 153-million cf/d would be sold by Midwestern to Michigan Wisconsin.

One utility in the area testified that its gas requirements would increase 400,000 cf/d by 1963. About 60 witnesses altogether were expected to testify in the proposal's behalf.

Midwestern urged a favorable decision before Nov. 1, termination date on its contract with Trans-Canada Pipe Lines.

Army Rolling on Rolli-Tankers

Rolli-Tankers, an unusual kind of container for shipment or storage of petroleum products, have come into use by the U.S. Army for transportation of fuel. The Army has bought 166 of them from Goodyear Tire & Rubber Co. for a price of $800,000.

Assembled in tandem, each tire-like container has a capacity of 500 gal., is 64 in. high and 42 in. wide. Designed to "go anywhere," according to Goodyear, they can be towed behind a vehicle, rolled by hand, or lifted by hoist or helicopter. They are made with oil- and chemical-resistant rubbers for a wide variety of liquids, the company says.

Depending on the type of liner used, liquids can be stored or moved in them under temperatures ranging from —65 deg. to 160 deg. F.

What's New / IN TRANSPORTATION AND STORAGE

Big Inch Pipe Corp. is building a $4-million, large-diameter pipe mill at Calgary, Alta., with completion set for mid-1960.

The mill will produce high pressure oil and gas transmission line pipe to API specifications in sizes ranging from 18 in. to 36 in.

Capacity will be 60,000 tons a year, on a one-shift basis, and twice that, on a two-shift basis.

Market forecasts for 1961 indicate that Canadian pipe requirements for gas line construction will reach 120,000 tons. Additional large demands could develop over the next few years, if new crude pipelines now proposed are started.

The joint venture firm of Dutton-Mannis, California Metal Corp. is the builder.

•

Pioneer Natural Gas Co. will supply 15-million cf/d of natural gas for a large re-pressuring operation in the Headlee-Devonian field, Midland and Ector counties, in West Texas.

A new venture for Pioneer, the project involves the field's 15 producing companies.

•

Service Pipe Line Co. has purchased the interest of American Oil Pipe Line Co. in Bayou Pipe Line System's 300-mi. products line.

The line connects Texas City and Baytown (Tex.) refineries with Plantation Pipe Line Co.'s system at Baton Rouge, La.

The purchase involves a 35% interest in the leg of the line between Texas City and Port Neches, Tex., and a 29% interest in the segment between the latter point and Baton Rouge.

•

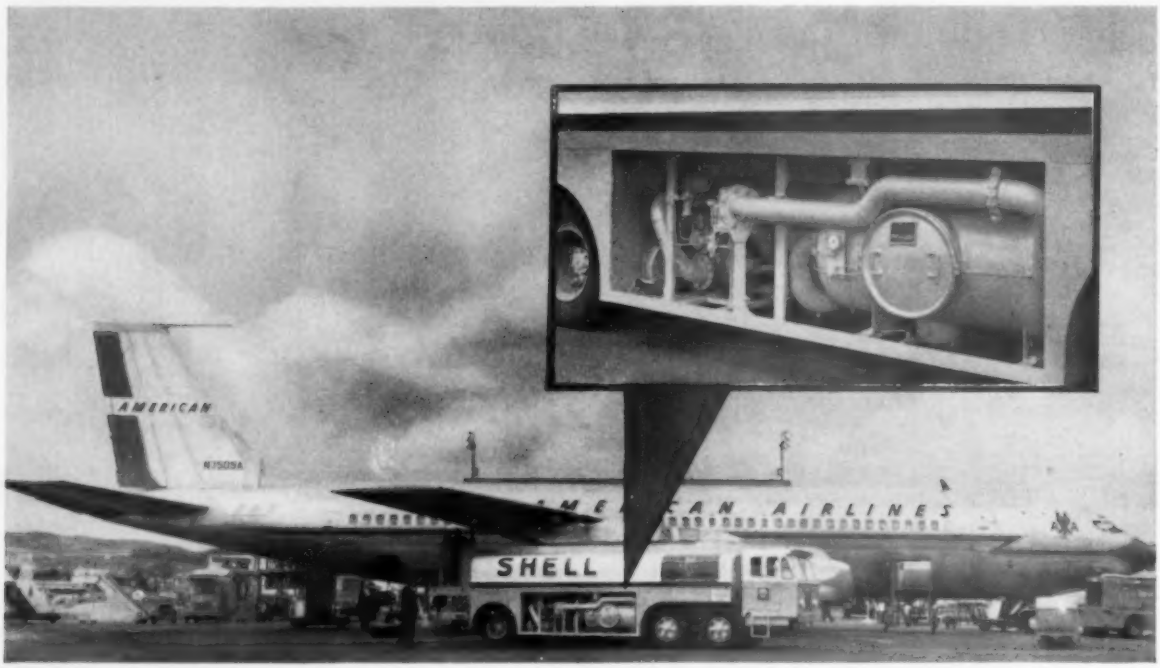
A newly-developed plastic plate, mounted in a steel assembly, for installation on fixed-roof storage tanks, is claimed to aid the fire-fighting and tank maintenance operations.

The new attachment, resembling a skylight, can be quickly and easily punctured by the gooseneck of a foam extinguisher, says its manufacturer, National Foam System, Inc.

•

Correction

In the July 24 issue, page 34, it was erroneously reported that Northern Natural Gas Co. will buy 30-million cf/d of gas from Midwestern Gas Transmission Co., if the latter builds its proposed line from Canada to the Upper Midwest. Northern Natural, which is planning an extension of its own line from St. Paul to Duluth, Minn., expects to increase its deliveries by 230.9-million cf/d, but the gas will come from other sources. The purchaser of the 30-million cf/d will be Northern States Power Co., which had not opposed MGT's original Upper Midwest plan, as might have been inferred from the story.



QUALITY OF JET-FUEL for commercial and military planes now comes up to rigid standard of cleanliness, as . . .

Fuel Filters Pass Jet Age Test

Manufacturers of mechanical filters and separators, realizing that "almost perfect" performance of conventional equipment is not good enough for the removal of water from jet fuel, are taking great pains to make it perfect.

Fuel contamination and entrained water are a serious hazard in jet plane operation. Jet fuel icing, in particular, due to moisture in the fuel, has been held responsible for several accidents.

The U.S. Air Force, commercial air lines, and oil refiners are vitally interested in this problem and are actively cooperating with the manufacturers in the development of satisfactory equipment.

The Aero Shell Turbine Fuel Equipment Laboratory of Shell Oil Co., at Sewaren, N.J., has been particularly active in that connection. It has:

(1) Developed reliable test techniques,

(2) Established practical fuel-cleanliness standards,

(3) Established full-scale filter and separator performance data, and developed equipment for that purpose.

Mechanical filters or separators cannot remove water that is dissolved in jet fuel. But it seems well established today that some filters are capable of removing all free water.

Filter-separators that use special paper-type elements, developed by Fram Corp., followed by a fiberglass coalescence cartridge, are being made by Warner Lewis Co., Tulsa.

Tests have demonstrated that such a unit is able to eliminate satisfactorily any water in the fuel.

The Fort Wayne Division and the Briggs Filtration Division of Bowser, Inc., have dispensed with the paper element in their filter-separators.

These filters are also acceptable for the elimination of solid particles.

Such units are now in use for the delivery of aviation jet fuel to many airlines.

The U.S. Air Force is also using another type of filter-separator, which has successfully passed the tests of Shell's Sewaren laboratory. This Perma-Dry water separation and filtering unit, made by Permanent Filter Corp., Los Angeles, is currently being used in the missiles and space-travel program.

This unit is based on a different principle. The water in emulsion in the fuel is caused to separate in two successive steps. In the first step, filtering occurs in a fiberglass filter contained in a nylon bag. In the second step, the flow of fuel is directed against a vertical metal element centered in a fiberglass and nylon padding. The emulsion is broken in this second, or "coalescing tube" stage, the water being removed from the bottom.

Manufacturers of chemicals are also developing certain products—such as the molecular sieves (PW—Jun.26'59, p34)—said to remove entirely not only discrete particles of water, but water held in solution as well.

The good performance of these filters would be of no avail if the fuel had a chance of being contaminated anew between the filtering point and its delivery into the aircraft.

Therefore, improved methods for rapid fueling, with the filtering equipment—generally truck mounted—immediately adjacent to the aircraft, are steadily being developed by oil companies serving the Air Force and the commercial airlines.

Fail-safe devices, which will automatically shut off the delivery equipment in the case of water or suspended solids exceeding a predetermined limit in the fuel, are being developed in the U.S. and abroad.

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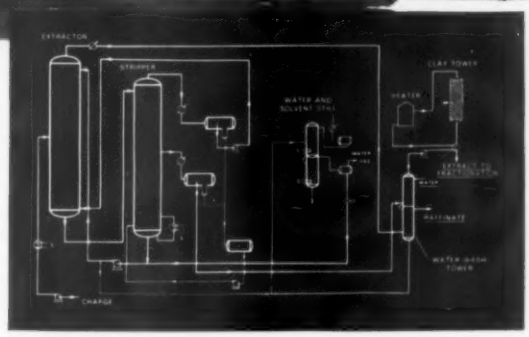

The ideal process for separation of super-purity aromatics

You can get substantial production of high-purity aromatics and still keep costs at a minimum with UOP's Udex extraction process. Udex-processed benzene, toluene and xylenes not only meet nitration-grade specifications but exceed these requirements in purity. These aromatics are produced at extremely low cost, since relatively inexpensive and readily available glycol solvents are used in the process. Utility requirements are considerably lower, too. The versatile Udex process permits recovery of aromatics from catalytic reformates, from by-product light oils produced in coke-oven operation, from thermal aromatic concentrates such as ethylene co-product light oil fractions and other aromatic-rich by-products. Although most petrochemical processors place major emphasis on recovery of benzene, toluene and xylenes, the Udex process also permits recovery of heavier aromatics and dicyclics in high purity. Udex is just one of many UOP refining and petrochemical processes available to the entire refining industry. A complete booklet on the UOP Udex process has just been published and is yours for the asking. For a detailed description of this process, how it works and the economic factors of cost and production, write us on your company letterhead.

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More Than Forty Years Of Leadership In Petroleum Refining Technology

To make petrochemicals . . .

Champlin Readies Raw Materials

The increasing demand for raw materials on the part of the petrochemical industry, has led Champlin Oil & Refining Co. to modify its natural gas facilities, and to expand its light hydrocarbons processing plants, at a cost of $3-million.

Heretofore, Champlin's three plants in the Stratton-Agua Dulce area of Texas were essentially recycling units: huge quantities of gas, from which the components for further refining processes had been separated, as well as some light gas fractions, were recycled into the ground.

Now, two of the company's three recycling plants will produce about 410-million cf/d of processed gas.

The new Gulf Plains plant has a capacity of 250-million cu. ft. a day. The Wardner plant, three miles away, will become the field compressor station, and will also reinject dry gas in the remaining gas cycling pattern. The third plant in the area is temporarily unaffected by the change; it has a process capacity of 125-million cu. ft. a day.

The new extraction plant is based upon low-temperature absorption of the light hydrocarbons in glycol.

The efficiency of absorption is considerably increased if the process is carried out at a high pressure and low temperature.

For the time being a temperature of —20F will be used, but it is planned to reduce that absorption temperature to —40F in the future.

Temporarily, the bulk of the methane and ethane will be removed by a primary absorber. Dissolved ethane is flashed from the rich oil, carrying with it much propane which is captured again in a smaller reabsorber. The high pressure is obtained in two 2,000 hp. compressors. This raises to 11,265 hp. the Gulf Plains power for compression and refrigeration. The field compressor station has an 8,000 hp. compressor.

It is estimated that ethane recovery will be increased by more than 2½ times, propane by about 3 times and butane by about 1¼ times.

A de-isobutanizer, with a 149-foot high tower, was added to the main processing station.

Champlin's plants produced only mixed, or "field," butane. The new facilities will fractionate the mixture into its normal and iso-butane components.

Continuous chromatographic analysis of the streams will monitor the operation.

A five-point chromatograph analyzes alternately the liquids and vapors in the process. A high degree of automation makes the operation more economical and more convenient.

The Fluor Corp. Ltd. of Los Angeles designed the process and constructed the facilities.

The plant is scheduled to go on stream this month. Meanwhile an intensive educational program is being followed to teach present employees the skill necessary to run the new, more technically complex, unit.

What's New / IN PROCESSING

Computers Are Leased For Daily Problems

Standard Oil Co. of California is leasing two new type portable digital computers, called "Recomp", from North American Aviation Autonetics Division to solve daily operating problems at its Richmond and El Segundo refineries.

Each Recomp (abbreviation of Reliable Computer) is roughly the size of a 2-ft. cube, weighs 197 lb. It plugs into an ordinary wall socket, and is said to use less power than a toaster.

More than 70 problems that can be solved daily with the help of these computers were disclosed recently.

Among these are problems such as inventory control, gasoline blending, optimum crude yields, and many others. Larger problems, beyond the Recomp's scope, are handled at Standard's Computer Center, where an IBM-704 is used for that purpose.

The company reports that a very small improvement in any one of these will pay for Recomp's rent.

Recomp's operation is simple enough for an unexperienced operator to learn in a short time. But programming will have to be done beforehand.

The new computers will not replace anybody, says Standard. It will improve the over-all efficiency, and supply the management with more and better information for day-to-day decisions.

•

Engelhard Industries will take over the licensing of Atlantic Refining Co.'s Catforming process and supply the platinum catalyst employed in the process.

Engelhard is now licenser and supplier for the RD-150 catalyst used in the Sinclair Baker reforming process.

Under the new agreement, the two catalysts will be supplied to refineries in Europe by a new company to be headquartered in Hanover, Germany. Kali-Chemie, A.G., of Hanover, supplier of the Atlantic catalyst in the past, is expected to participate in the new company.

•

A $12-million expansion project is planned for Esso A.G.'s Cologne refinery. The plant's second steamcracker, to be completed in 1961, is expected to double Esso's present petrochemical capacity of 45,000 tons of ethylene, 35,000 tons of propylene, and 7,500 tons of butadiene annually.

The first steamcracker at the new Cologne refinery started operations this year. The company is also planning a plant to produce tetrapropylene to be used by the German detergent industry.

•

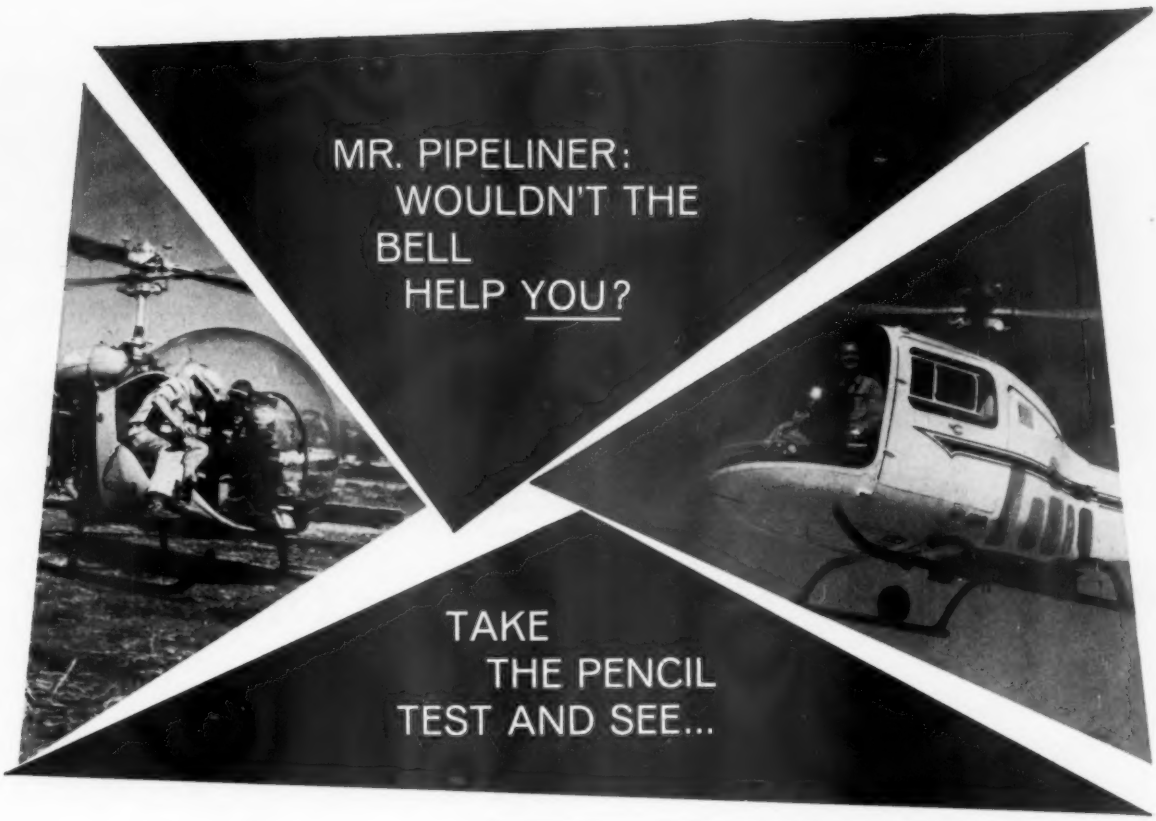
Monsanto Chemical Co. has been awarded an Air Force contract to supply 6,000 lb. of a new synthetic lubricant for possible use in future hypersonic aircraft.

The fluid is one of a group of polyphenyl ether compounds developed by Monsanto for the Air Research and Development Command. It is described as being "far more stable to nuclear radiation and high heat conditions than any other type of organic fluid."

•

Commercial and product development plants for the production of high impact and conventional polystyrene will be built by Amoco Chemicals Corp. at Joliet, Ill.

The commercial plant is slated for completion by late 1961. Polystyrene processes developed by the research laboratories of Standard Oil Co. (Ind.) will be used in the product development facilities to be in operation by the second quarter of 1960.



How does a pipeline man use his Bell helicopter? For some time we've been gathering operational data from Bell users. Among it are striking cases of how imaginative contractors make big capital out of a versatile machine. But these are frosting on the cake. The "cake" itself is the Bell's ability to start for you, today .. perform half a dozen basic jobs .. improve efficiency and save you money in the bargain. To see what we mean, answer these questions. Then ask yourself .. isn't it time to try a Bell now?

YES	NO	
☐	☐	Could we sharpen up our contract bids (and eliminate errors in surveying) by getting a closer look at the proposed right of way?
☐	☐	In pipe stringing, do we have a major problem of communications between work units?
☐	☐	Would it save costly supervisory time if we could get inspectors *quickly* to any spot along the right of way?
☐	☐	Ever consider the morale factor of having instant air-ambulance service to any job site in the wilderness?
☐	☐	Could we impress more prospects by showing them our work-in-progress, from the air and at close range?
☐	☐	Do our estimators know that Charter Helicopter Service is easily available for trial and experimentation?

Now tear out this pencil test portion and send with your name, title, company and address to: Department 25H, Bell Helicopter Corporation, Fort Worth, Texas. We'll send you additional information about the Bell's role in Construction and Utilities.

BELL

HELICOPTER CORP. FORT WORTH 1, TEXAS • SUBSIDIARY OF BELL AIRCRAFT CORPORATION

CONOCO's new Houston station places the office right at the pump island.

SPACIOUS layout is designed for speed at the

New Designs Put the Dealer Out Front

Last week, two more votes were cast in favor of greater pump island diversity. One came from a top operations manager, the other from a southwestern marketer.

A pump island that doubles as a station office—that's one of the latest features in service station design, according to R. A. Niles, chairman of the operations and engineering committee of the American Petroleum Institute's Division of Marketing.

With the station office at the pump island, dealers will not have to pay their help for scurrying back and forth between the island and the cash register and other office facilities, Niles says.

Tires, batteries, accessories and other impulse items will also be shifted from the office to the island. Placed right at the point of (gasoline) sale, these items will catch the eye of the 7 out of 10 motorists who (according to Niles) never get out of their cars.

To man the islands will be an especially assigned staff of attendants who devote all their time to the services that will blossom forth around the gasoline pumps. Thus, the pump island will become a greater merchandising area, but will never lapse into a completely self-service platform, Niles emphasizes. Safety requirements, insurance restrictions, and fire ordinances in addition to the consumer's desire for assistance preclude any trend toward self-service operation.

In these views, Niles is supported by several other marketing executives, interviewed by Petroleum Week, who accent the continued need for attendants at the pump islands—(PW—Feb.13'59,p44).

Niles' forecasts of design trends are brought to life by a new station under construction by Continental Oil Co.—the new Conoco station flourishes a modern pump-island office (picture).

The office introduces air conditioning to the pump island, permitting a cool attendant to service the "transit-trade" for which the station is designed. This trade consists of the "on-the-go" apartment dwellers, who, according to Conoco, travel about more than home owners do.

This station, which will provide hurry-up service to impatient motorists, is "an outdoor petroleum supermarket with modern, stop-'n-shop atmosphere," says Conoco.

To catch the attention of the highway-bound motorists is a flashy billboard (placed at the driveway of the station) that telegraphs special sales announcements or keeps the passing motorist informed about local sporting events. The lettering on the billboard can be quickly and easily changed.

Teaming up with the billboard is a "display case" showroom. Lined with imported red venetian glass tile, and sporting pyramidal shelves, this modern merchandising section becomes a handsome sales-booster by itself (picture).

Significantly, the showroom (stocked with motor oil, batteries, and accessories) is actually a replacement for service bays, which have been completely eliminated from the new Conoco station. In this way, the Conoco station departs from the predictions of Niles, who says that the station of tomorrow must handle everything but major overhaul work, if it is to keep pace with the technical developments from Detroit. But, recognizing the need for a rapid-service station in some areas, Niles' own company, Standard Oil Co. (Ind.), is experimenting with a design that excludes lubrication and repair facilities.

The modern station building will expand sideways—ranch style—incorporating more storage space for larger inventories, Niles feels.

Niles believes that vertical expansion is too complicated and furthermore does not lend itself to expanded storage. More storage space will be needed, says Niles, because of the added inventories of equipment and parts required for today's complex automobiles.

There will be no reduction in the number of bays. The one bay station is on the way out and the car washing bay is being converted to service bays, says Niles.

Tomorrow's station will have more landscaping, spaciousness, and parking area, says Niles.

The federal highway program, which restricts service stations to access

pump and merchandising at the "display-case" showroom in the rear of the station.

NO TIRES, repairs, or lube jobs here.

roads, will stimulate the trend toward larger outlets—with expanded real estate frontage. Furthermore, the highway program will add to the push to higher volume outlets, which Niles feels will replace the small, marginal stations.

The pumps on new stations will be horizontal—(note Conoco's new pumps) in contrast to the vertical pumps of today that make everything at the station point upward like derricks in an oil field, Niles feels.

There will be more community type design to residential stations and restrooms will be upgraded by improved detergents and more attractive decor. Station roofs will be mostly of the shed-type, with sun and weather shading.

The modern station must be flexible—capable of adjusting to the shifting specifications of new automobiles.

Niles points out that the oil industry must be able to replace the services that it might lose with other services that it has never performed before. To adapt to this change, the service station must be flexible in its design.

The decided trend toward prefabricated stations, Niles feels, is providing the oil industry with flexible outlets for its products. Vitreous enamel pre-fabs are sufficiently adaptable in their basic design to fit any market, location, or area. Niles says they are like a child's erector set that can be remade a myriad of different ways. Several companies have already turned to pre-fabricated stations, including Pure Oil Co., Cities Service Oil Co., Shell Oil Co., and Niles' own company, Standard Oil Co. (Ind.)

Looking into the distant future, Niles says the sky's the limit on potential changes in design and the whole concept of retail marketing.

The service station could become incorporated with other retail outlets in modern shopping centers in a unique way. Niles envisions the lady of the house driving her car up to a great service island, hopping out to do all her shopping along a walk (fitted with push-button selectors), and finding her car waiting at the other end (completely serviced).

What's New / IN MARKETING

In Washington State, 6,000 member dealers may close their stations on Aug. 19, in accordance with an order by the Washington Gasoline Dealers Assn.

Roy Weston, president of the association, announced the order after talks with suppliers last week failed to produce agreements on uniform tank-wagon prices and the elimination of subsidies.

•

Oil Heat Institute is setting up a committee to bring oil opinion to bear on the proposals of the National Conference on Weights and Measures.

First step for the committee will be to confer with W. S. Bussey, secretary, about the National Conference's recent proposal that states adopt a model law requiring fuel oil distributors to have their truck drivers leave signed tickets at delivery stops.

Practice varies from state to state now, but the National Conference proposal may induce more widespread adoption of the ticket requirement, which, oil men feel, is time-consuming and subject to driver's error.

•

Providing lubrication equipment to new car dealers is no violation of anti-trust legislation—if the dealers are free to purchase their lubes from other suppliers.

This is the opinion of Robert L. Piper, hearing examiner for the Federal Trade Commission, in a case involving Socony Mobil Oil Co. He dismissed an FTC complaint charging Socony with lessening competition through exclusive dealing contracts.

•

Tidewater Oil Co. announced last week that it is honoring Hilton's all-purpose credit-card—Carte Blanche—at its 10,000 retail outlets.

Tidewater thus becomes the third major oil company to sign with Hilton. The others are Socony Mobil Oil Co. (and its domestic affiliates) and Union Oil Co.

DEPT/International

New Try at Cutting Heavy Crude Costs

(A Report from Petroleum Week's Caracas Bureau)

- **Watch the large-scale trial of bottom-hole dilution now under way in eastern Venezuela.**
- **It's expected to slash both capital and operating costs of producing heavy crudes.**

CARACAS—A significant new attack on the problem of economic production of heavy crudes has been launched: It's bottom-hole dilution, on a scale never before tried anywhere.

It has been undertaken for the first time in Venezuela by Mene Grande Oil Co., a Gulf Oil subsidiary. Jersey Standard's International Petroleum and Royal Dutch Shell each have a 25% undivided interest in Mene Grande's holdings.

The project involves thinning out 11 to 12-gravity crude, in the bottom of wells, in Mene Grande's new Melones and Miga fields in the South Oficina area of eastern Venezuela.

The "thinner" is 24-gravity crude from Dacion and Leona, two nearby fields in Anzoategui state. The result: a more manageable 16- to 17-gravity mixture.

The aim is to save on costs of both producing and transporting the oil, by lowering viscosity of the heavy crude at the starting point of the production process.

Basis for the method is that a slight variation in gravity of heavy crudes is accompanied by a sharp change in viscosity. Thus, by raising the gravity of Melones and Miga crude only 4 or 5 degrees by dilution, the viscosity is lowered by a factor of about 10.

Importance of the project is that it could affect billions of barrels of heavy crude reserves in eastern Venezuela's southern producing area, where the perennial problem of economic production hasn't been fully solved.

Mene Grande itself proved out "several billion" bbl. of 10-gravity oil in place there during the past year alone. Other operators, including newcomers to Venezuela, also have proved reserves of heavy crude in the area.

This fall Mene Grande expects to be pumping 20,000 b/d of 24-gravity crude into 400 wells in the Melones and Miga fields.

The input, regulated at the wellhead, is at a proportion of one bbl. of diluent to three bbl. of heavy crude produced.

By October the company plans to produce around 80,000 b/d of the diluted crude, to be used as charging stock for a new 60,000 b/d refinery addition now under construction at the Puerto La Cruz plant of Venezuelan Gulf Refining Co., owned ⅔ by Gulf, ⅓ by Texaco.

Its savings in both capital investment and operating expenses will be substantial, though the total can't yet be estimated exactly.

Initially, application of the bottom-hole dilution method will cut several million dollars from capital expenditures for development of the two fields. The principal savings are in the power distribution system for electric pumps; and smaller pumping units, well casing, production tubing, flow lines, gathering lines, and trunk lines.

In long-run operating expenses, savings will include lower electric power consumption, less wear on pumping units and sucker rods, and lower treating costs. The latter saving results from rapid separation of water and the diluted crude in field tanks, whereas water does not readily settle out from the undiluted heavy crude.

Due to cost of the distribution system for the diluent crude, the bottom-hole dilution method is not economic for small wells. For larger ones, Mene Grande figures the payoff is roughly proportional to the size of the wells.

Average per-well production in the Melones and Miga fields is 200 to 300 b/d. The wells are single completions from Oficina sands between 4,500 ft. and 5,500 ft.

The lighter crude is taken off a lateral line from the Dacion and Leona fields and carried 10 mi. through an 8-in. and a 10-in. line to the heavy crude area, where two booster pumps maintain pressure to the Miga and Melones wells.

A branching network of diluent distribution lines parallels the flow lines in the fields, with 2-in. lines to individual wells. The entire producing, diluent, and transportation system for the fields totals about 600 mi. of pipeline.

The lighter crude is pumped down the wells through 2-in. production tubing, unlike some diluent systems outside of Venezuela, where the thinner is injected through a hollow sucker rod.

The mixture resulting at well bottom is pumped up through the annular space between production tube and 7-in. casing by use of a cross-over arrangement.

Guatemala's First Promising Oil Show

Ohio Oil, encouraged by a promising show of 36-gravity crude at 10,005-36 ft. in its first Guatemalan wildcat, is now drilling below 10,535 ft. toward a projected 13,000 ft. (PW—Jul.24'59,p18). To the northeast, Atlantic's San Francisco test, slowed by cave-ins, is now below 2,730 ft., while Shell's No. 1 Laguna Blanca is being abandoned at 3,971 ft.

Mene Grande found bottom-hole dilution showed the greatest saving after studying the relative economics of diluting the heavy crude at various points between the fields and the new Puerto La Cruz refinery unit.

The points studied: the pump station of the 30-in., 98-mi. Oficina-Puerto La Cruz trunk line; the field discharge stations; and wellhead—in addition to well bottom.

In the bottom-hole method, Mene Grande figures a capital cost saving of about 15% for wellhead equipment, electric power distribution, and pipeline alone. The saving in operating costs is harder to calculate closely, since it includes factors difficult to evaluate at this stage—such as less wear on pumps and sucker rods, and lower treating costs.

In one of the same fields, Mene Grande is also now starting Venezuela's first in situ combustion field trial as a joint project with Creole Petroleum.

In this experiment, air is being injected into the T sand of the Melones field from a newly built air compressor plant with capacity of 1.2-million cu. ft. daily.

Argentina Delays on Contracts

BUENOS AIRES—Argentina's dire lack of funds is holding up ratification of the four drilling contracts awarded this year—three to U.S. firms.

The three-year contracts, worth an estimated $84-million, cover a total 2,100 wells in Comodoro Rivadavia. Though firmly signed, it will take government ratification to make them operative and to permit drilling to start.

Southeastern Drilling Co. has the biggest—for 1,000 wells, payable at $19 per meter drilled. Kerr-McGee Oil Industries has a 500-well contract for $19.80 per meter, and Italy's state-owned ENI and C. J. Simpson Drilling Co. each have 300-well contracts payable at $20.50 per meter.

A squabble has developed between the new Economy Minister and YPF, the state oil agency, over ways to finance obligations of the over-all oil program—including the twin northern pipelines under construction by the Fish Engineering Corp. group.

The YPF board recently presented a plan for a $23½-million bond issue to meet short-term payments on the $180-million pipeline project. Economy Minister Alvaro Alsogaray felt this wasn't the answer.

As a result, YPF president Horacio Aguirre Legarreta tried to resign for the second time within a month.

YPF has now accepted a $2-million long-term credit from the Hanover Bank and hopes it can get more U.S. credits. It needs an estimated $700-million—a sum that cannot be raised in Argentina—to meet the target of oil self-sufficiency in 1961.

YPF's operating budget for this year is 27-billion pesos—roughly $318-million at the free rate. Of this, about $140-million is earmarked for capital investments, far short of requirements.

Aguirre says a major problem right now is financing for the 1,800 wells YPF itself plans to drill in Comodoro Rivadavia—in addition to the 2,100 to be drilled under the four still-unratified contracts.

With financing unresolved, the government is once again faced with far-reaching decisions on the oil question, claims ex-Finance Minister Cesar Bunge. His solution: outright oil concessions, "Venezuela style."

"It's the best solution," said Bunge, who was fired a couple weeks ago. "Last year's five oil development contracts with U.S. and British firms aren't enough to get the oil problem afloat."

Trinidad Deal Set By Dallas Firm

Stekoll Petroleum Corp., Dallas-based producer, is now ready to join the oil hunt in Trinidad—its third foreign move so far this year (PW—Jul.17'59,p35). According to details of the projected venture announced this week, it's a farmout agreement with Dominion Oil Co., a California Standard subsidiary.

The farmout pact now signed covers a 20,000-acre lease in the Colenso area of southeast Trinidad, to be taken over by the newly formed Stekoll Panamanian Petrolera S.A.

Stekoll will drill at least four wells to 5,000 ft. or production, whichever is reached first. It also may rework existing wells on the acreage.

Though terms were not announced, Dominion Oil reportedly retains an option to purchase 50% interest in lieu of an over-riding royalty.

The company, which also operates in Canada, moved outside North America for the first time earlier this year, when it was granted a 52-million-acre concession in Australia. It's now preparing for an aerial survey of the acreage, in northeast Queensland, (PW—Jun.26'59,p42).

Stekoll also has moved into Venezuela, under a farmout.

Aramco Makes Broad Pitch for Gas Buyers

Saudi Arabia's interest in promoting commercial use of unused natural gas was given a push by Arabian American Oil Co. last week.

Aramco issued a color brochure entitled "Natural Gas for Sale in Saudi Arabia," printed in Arabic and English for distribution throughout the world to acquaint industrial investors with the availability of casinghead gas.

The Saudis are hoping the gas will attract development of a petrochemical industry in the country.

Aramco is not interested in going into such a development itself, but hired a West German firm to survey the gas availability in its area for any prospective buyers.

Aramco is offering 20-year gas sales contracts with "low price" and "favorable terms" that it hopes will attract industries to Saudi Arabia to use the gas "for fuel, chemical processing, or other purposes." The contract terms, it adds, may be for "shorter or longer" periods, with initial price subject to periodic adjustment.

Aramco is offering to "cooperate with any prospective gas purchaser", and to assist in "choosing a local plant site, taking into consideration location of gas reserves, port facilities, labor supply, water availability and transportation."

Volume available is 163-million standard cu. ft. daily this year, rising to 201-million in 1960 and 214-million in 1961.

Presently, gas is or will be available from six producing areas.

"If presently available gas is not sold," Aramco states, "the company will continue in its program of conservation by injecting it into underground formations as economic increments become available."

What's New / AROUND THE WORLD

Hunt Ends Drilling

WEST PAKISTAN—Hunt International is moving out its rig—to Libya—after drilling 11 wildcats and participating in two joint-interest tests with British-owned Pakistan Petroleum.

The Dallas firm told PETROLEUM WEEK it will continue geological and gravity work, but that it has drilled all its most favorable-looking prospects. Its last wildcat, No. 2 Phulji, was abandoned May 1 at 8,321 ft. A couple of others found insignificant quantities of gas, Hunt said. One of the joint tests was completed as a gas well but shut in for lack of market.

•

SAUDI ARABIA—The new 32-gravity Khursaniyah field will start production in mid-1960 with 45,000 b/d capacity from the Arab C Zone alone.

Aramco expects to have completed seven producers in the field, one or more in each of the four Arab zones.

•

IRAN—Though financing remains a big question, Iran has invited international tenders for a new refined products export terminal to bypass Iraq's control of tanker traffic from Abadan refinery through the Shatt-al-Arab River (PW—Dec.19'58,p46).

The plan calls for a $35-million 320,000 b/d product line from Abadan and a $65-million, 7-jetty loading terminal at Khour-Moussa, a new port 41 mi. away, outside the river.

•

LEBANON—The leading West German producer, owned 11½% each by Esso and Shell, is starting a geophysical survey (PW—Apr.17'59, p60.)

Gewerkschaft Elwerath has a tentative pact for a 50-50 partnership with Cie. Libanaise des Petroles, a local company whose 75-year concession was recently extended in area and ratified by parliament.

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VENEZUELA — Creole Petroleum has cut its capital and exploration expenditures nearly in half, to $43.4-million, in the first six months, compared with $82-million in the same period of 1958.

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JORDAN—Phillips Petroleum wants to exchange some of its acreage—rather than extend its concession to ⅔ of Jordan, from ⅓, as reported in the Middle East.

"We've drilled five dry holes," Phillips told PETROLEUM WEEK. "Before further exploration, we'd like new acreage in exchange for some of the explored acreage on our concession."

Though oil output in key Middle East producing states dropped off in June, the six-month average of 4,349,900 b/d shows a 9% climb over the same period of 1958 and a 5% gain over last year's record 12-month average of 4,135,800 b/d. The totals, in 000 b/d:

	June '59	June '58	May '59
Kuwait	1,273.5	1,383.2	1,447.4
S. Arabia	1,084.8	951.3	1,052.0
Iran	944.0	789.0	978.0
Iraq	819.9	752.0	799.6
Qatar	168.6	161.0	169.7
Total	4,290.8	4,036.5	4,446.7
6-mo avg.	4,349.9	3,994.6	.....

•

TUNISIA—The Conorada group will start seismograph work in September, south of the Chott Djerid salt flat. This is in the southern part of the 10,945 sq. mi. central Tunisian tract it was awarded last year.

•

Wildcats in the News

COSTA RICA—The deep exploratory test near Puerto Limon, originally slated for 15,000 ft., has been abandoned at 6,755 ft. due to drilling difficulties caused by high pressure water (PW—Apr.10'59,p33). It's the first of a series planned under the joint venture between Gulf Oil and Union Oil Co. of California, which previously drilled several wildcats of its own.

LIBYA—A mid-October spudding-in date is set for British Petroleum's first Cyrenaica wildcat. The 12,000-ft. test, BP's fourth and deepest to date, will be 200 mi. south of Tobruk in an uninhabited gravel plain. It will be kept supplied by air.

NICARAGUA—A Los Angeles newcomer plans to spud in the first of two west coast wildcats in 90 days. It's the first foreign venture for Occidental Petroleum Corp., which announced it is acquiring an 800,000-acre concession. The tests will be drilled by Gene Reid Drilling Inc., a subsidiary.

LIBYA—Hunt International has selected several alternate sites on its two blocks for its initial Libyan wildcat. It'll be ready to start drilling in a couple of months with the rig it's now moving in from Pakistan.

BURMA—The first deep exploratory test outside the known limits of the shallow Chauk field will be carried to 9,000 ft. Chauk wells vary from 1,800 to 4,700 ft. The British-owned Burma Oil Co. (1954) Ltd. says it expects No. 1000 Chauk to meet very high pressures at the deeper levels.

Newcomers Boost Venezuelan Output

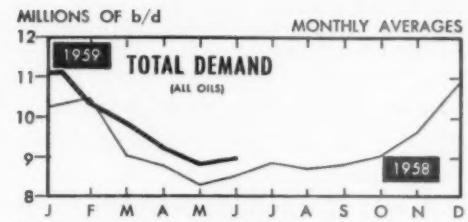
VENEZUELA—Oil output in the first six months was 13.5% over the same period last year, at 2,853,000 b/d, according to the Ministry of Mines & Hydrocarbons. The rate, however, was unchanged from the last two months of 1958.

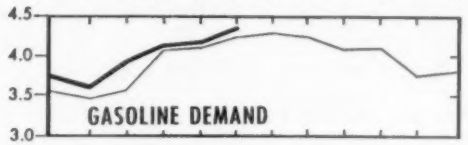
Newcomers to Venezuela showed big percentage gains. But they accounted for only 82,800 b/d of a 338,700 b/d net increase. Shell jumped 27.6% and Creole 13.6%.

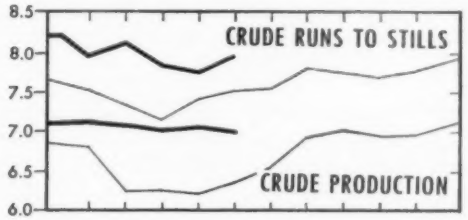
Following are company averages in 000 b/d, with changes from 1958 in parentheses: Creole 1,164.5 (+138.9); Shell 870.9 (+188.6); Mene Grande 369.9 (—19.1); Socony 117.7 (—10.5); Mercedes 31.5 (—0.9); Richmond 51.1 (—27.6); Texaco 52.0 (+1.7); Atlantic 25.7 (—3.4); Sinclair 53.4 (—10.5); Phillips 11.1 (—1.0); Talon 1.4 (—0.2); Caracas 0.1 (+0.1); Coro 0 (—0.1); Superior 19.0 (+7.1); Sun 31.2 (+25.9); San Jacinto 30.5 (+27.2); Signal 22.7 (+22.6); Pan Venezuelan 0 (—0.1).

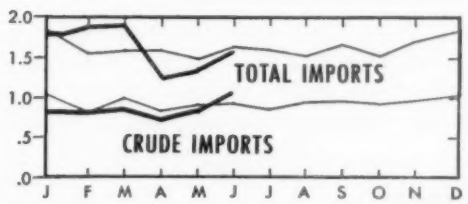
PETROLEUM WEEK'S

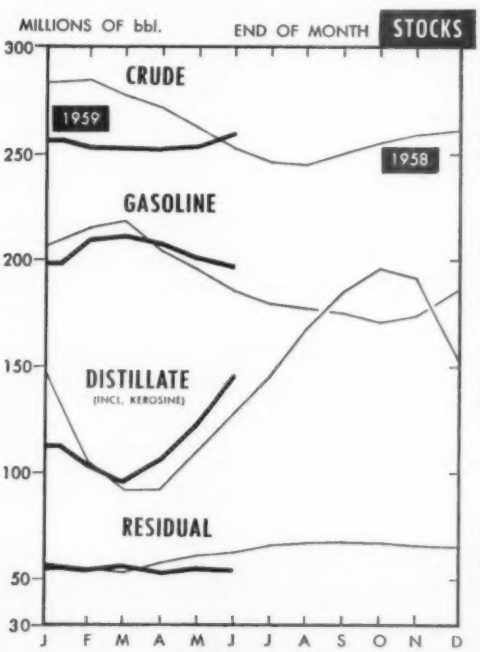
Fingertip Figures











Supply-Demand Figures for July

(millions of b/d)

	July 1959	% Change from year ago	7 Months 1959	% Change from year ago
Total Demand (Inc. Exports)	8.964	+ 1.1	9.728	+ 6.4
Gasoline	4.508	+ 4.8	4.100	+ 5.0
Distillates (Inc. Kerosine)	1.314	— 8.5	2.195	+ 1.2
Residual	1.267	— 3.7	1.701	+13.8
Total Supply	8.941	— 0.1	9.745	+ 9.6
Domestic Crude	6.840	+ 4.1	7.129	+10.0
Nat. Gas Liquids	.800	+ 3.9	.858	+10.3
Total Domestic	7.640	+ 4.1	7.987	+10.0
Crude Imports	.850	— 2.1	.921	— 0.9
Total Imports	1.301	—19.2	1.758	+ 7.6

Figures for period ended July 31, except as noted

RUNS TO STILLS
Latest week 7.997
Previous week 8.042
Year ago 7.727

CRUDE PRODUCTION
Latest week 6.808
Previous week 6.855
Year ago 6.545

TOTAL IMPORTS
Latest week 1.323
Previous week 1.245
Year ago 1.654

CRUDE IMPORTS
Latest week .923
Previous week .757
Year ago 1.157

CRUDE STOCKS
Week ended 7-25 264.7
Previous week 270.4
Year ago 248.8

GASOLINE
Latest week 186.5
Previous week 188.2
Year ago 178.7

DISTILLATES
Latest week 168.5
Previous week 163.4
Year ago 146.3

RESIDUAL
Latest week 55.7
Previous week 54.8
Year ago 66.9

The volume of new supply—domestic production plus imports—in July, averaging 8.9-million b/d, was 518,000 b/d less than in June. It also showed the first year-to-year decline of 1959.

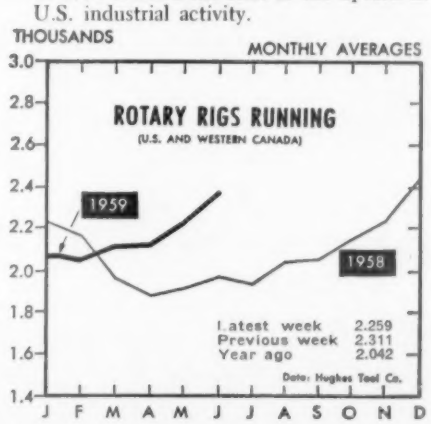
Compared with the previous month, July crude output was off 167,000 b/d; natural gas liquids production was down 50,000 b/d, crude imports were down 283,000 b/d, and product imports were off 18,000 b/d.

Refinery runs in July were at about the June level, despite the strikes at four Indiana Standard refineries.

July runs averaged 7,952,000 b/d, only 40,000 b/d under the June rate. And for the year to date refinery throughput has averaged 8,024,000 b/d, an increase of 7.5% over 1958.

Residual demand, which has been a pace-setter during most of 1959, dropped silghtly under the year ago level in July.

It reflects to some extent that the industry is moving into the second half which in 1958 marked the start of the upturn in U.S. industrial activity.



The Market Trend

The Long and Short of The Texaco Mergers

Texaco's merger plans with Superior Oil and Paragon make excellent market strategy when viewed in combination. The long suits of the two independents dovetail with short suits of Texaco in several important areas.

Texaco is short of crude on the West Coast, where Superior is a seller. By teaming up, Texaco will beef up its supply of domestic crude for use in its Los Angeles refinery.

Texaco is about 75,000 b/d short of crude for its Pointe-a-Pierre refinery in Trinidad, and Superior is long in Venezuela. For a while, Texaco had covered the Trinidad shortage by moving Safaniya crude from the Persian Gulf. Using Venezuelan crude, however, is better politics.

In the East, Texaco historically has been lean on fuel oil distribution, and the Paragon merger will pick up about 30,000 accounts. Paragon's total sales may run as high as 125,000 b/d, and the company is a substantial marketer of residual fuel. Texaco's expansions in the Caribbean will fit in nicely here.

From an import standpoint, the merger plan with Paragon is just what Texaco needs. Texaco was a relatively slow starter in East Coast heavy oil markets, which are supplied primarily by foreign oil. On the other hand, Paragon is an importer of record from the Netherlands, Antilles, Mexico, and the Persian Gulf.

For when the government handed out quotas, Texaco was permitted only 901 b/d of residual imports, and Paragon got 57,705 b/d. Paragon also has a substantial oil burner sales position, retailing about 15,000 units a year, which will fit into Texaco's expansion plans for fuel oil.

If the mergers go through as planned, Texaco will have shored itself up in three important areas: the West Coast, the East Coast, and the Caribbean. Paragon's sales volume will guarantee a market for the Trinidad refinery and for Superior's crude concession in Lake Maracaibo.

As far as other marketers are concerned with Texaco's merger moves, all they can see is formidable competition.

A Tough Market In New York:

New York rack No. 6 prices are the hardest to figure, for they continue to fall despite the import barrier. Last week, prices at the rack fell to $2.14 a bbl., and there were indications that $2.09 was a distinct possibility.

In contrast to the weak residual market in New York, a Gulf Coast seller disposed of two cargoes of bunker "C" fuel at $2.00 a bbl.

Southeast 'Gas' Prices Move Up:

Gasoline price increases in the Upper Midwest spread to the Southeast last week. Kentucky Standard increased its prices 0.5¢ a gal. in five states.

But Gulf Coast refiners still are looking for a substantial demand hike because of the struck refining capacity in the Southwest and Midwest. It has not showed up yet, but the refiners are hopeful. Several cargoes of gasoline are offered for mid-August and early September.

The Market Place AROUND THE WORLD

Prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service and National Petroleum News, McGraw-Hill Publications

All prices as of August 3

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U. S. Gulf Coast, cargoes
- Gasoline, 98 oct prem....12.125-13
- Gasoline, 92 oct reg....11-11.5
- Kerosine....8.5-10.375
- Heating oil, No. 2....8.125-9.875
- Gas oil, 48-52 d.i....8.25-10.125
- Fuel oil, bunker "C"....$2.00-2.10

Caribbean, cargoes
- Avgas, Grade 100/130....15.25
- Gasoline, 93 oct research prem....11.25
- Gasoline, 87 oct research reg....10.375
- Gasoline, 79 oct research....9.625
- Gasoline, 70-72 oct motor method....9.5
- Kerosine....8.75
- Heating oil, No. 2....8.125
- Gas oil, 48-52, d.i....8.25
- Fuel oil, bunker "C"....$2.00

New York Harbor, barges
- Kerosine....9.65-9.9
- Heating oil, No. 2....9.15-9.4
- Fuel oil, No. 6....$2.37

Okla-Group 3, northern shpt., bulk
- **Gasoline, 91 oct reg....12↑-12.5**
- Kerosine....9.5-9.875
- Heating oil, No. 2....8.25-8.875
- Fuel oil, No. 6....$1.60-1.80

Chicago, bulk
- **Gasoline, 91 oct reg....12↑**
- **Heating oil, No. 2....9.25↓-10.85**
- Fuel oil, No. 6 high sulfur....7.4-7.5

Los Angeles, rack
- **Gasoline, 88 oct reg....11.25↓-12.65**
- Diesel fuel, PS 200....8.5-11.25
- Light fuel, PS 300....$2.80
- Heavy fuel, PS 400....$2.15-2.35

Natural Gasoline, Grade 26-70
- FOB Group 3....4.5
- FOB Breckenridge, Tex....4

LP-Gas
- Propane, Oklahoma (Group 3)....4
- Propane, Baton Rouge....4.625-4.875

Pennsylvania Lubes
- Bright stock, 25 p.t....22
- 200 vis. neutral 25 p.t....23

Mid-Continent Lubes, Tulsa basis
- **Bright stock, solvent, 95 v.i....23-25↑**
- **Neutral, solvent, 200-210 vis....19.5-21.5↑**

Gulf Coast Lubes
- Bright stock, solvent, 95 v.i....24
- Neutral, solvent, 200 vis....20.5

Eastern Hemisphere

Singapore (Pulau Bukom), cargoes
- Avgas, grade 100/130....16.5
- Gasoline, 79 oct research....10
- Kerosine....10.5
- Gas oil, 48 d.i. minimum....10

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, 36.0-36.9....$2.77-2.97
- North Dakota, 36.0-36.9....2.62-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9....3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9....2.92-3.22
  - West Texas, sweet, 36.0-36.9....3.00
  - West Texas, N. M., inter., 36.0-36.9....2.93
  - West Texas, N. M., sour, 32.0-32.9....2.71
  - East Texas, flat....3.05-3.25
  - Mirando, 28.0-28.9....3.31
- Illinois Basin, flat....3.00
- Pennsylvania Grade, Bradford dist., flat....4.25
- California, Signal Hill, 21.0-21.9....2.50-2.54†
- North Louisiana-Arkansas, 36.0-36.9....2.77-3.02
- Wyoming, sweet, 36.0-36.9....2.85-2.90
- Wyoming, sour, 32.0-32.9....2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.)....2.38
- Leduc-Woodbend (Alta.)....2.53
- Redwater (Alta.)....2.42
- Steelman A (Sask.)....2.435
- Virden (Man.)....2.31

Venezuela (Cargoes, FOB lifting port designated)
- Cumarebo, 47.0-47.9, Tucupido....$3.34
- San Joaquin, 41.0-41.9, Puerto la Cruz....3.10
- Oficina, 35.0-35.9, Puerto la Cruz....2.78-2.80
- Tia Juana, Medium, 26.0-26.9, Amuay....2.30
- Bachaquero, flat, Las Piedras....1.73-1.88
- Tarra, 38.0-38.9, San Lorenzo....2.83
- Lagunillas Heavy, flat, Cardon....2.10

†*Differential per deg. of grav. varies.*

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura....$1.89-1.90
- Safaniya, 27.0-27.9, Ras Tanura....1.50
- Iran, 34.0-34.9, Bandar Mashur....1.86-2.04
- Iran, 34.0-34.9, Abadan....1.81
- Iraq, 35.0-35.9, Fao....1.80
- Kuwait, 31.0-31.9, Mina-al-Ahmadi....1.67
- Qatar, 41.0-41.9, Umm Said....2.05
- Neutral Zone, Burghan, 23.5-24.4, Mina Saud....1.51
- N. Zone, Eocene-Ratawi, 20.5-21.4, Mina Saud....1.38

Middle East, Eastern Mediterranean
- Arabian, 34.0-34.9, Sidon....$2.27
- Iraqi, 36.0-36.9, Tripoli, Banias....2.31

Far East, Cargoes, FOB Lutong, Sarawak
- Seria Light, flat....$2.57

KEY TANKER RATES

(Last paid, per long ton, single voyage)

- **U.S. Gulf-N. Y., clean....(USMC—27½%) $2.07↓**
- **U.S. Gulf-New York, dirty....(USMC—30%) $2.00↑**
- NWI-USNH, dirty....(USMC—55%) $1.24
- NWI-UK/Cont., dirty....(Scale—30%) 22/9*
- Persian Gulf-UK/Cont., dirty....(Scale—70%) 20/10*
- Persian Gulf-USNH, dirty....(USMC—75%) $3.18

**Sterling.*

DEPT/Personals

H. T. Dodge

L. B. Derby

HARRIS T. DODGE has been elected senior vice-president in charge of world-wide sales operations for Texaco Inc., New York, and **LANDON B. DERBY** has been elected vice-president in charge of foreign operations, Western Hemisphere and West Africa, succeeding Dodge. Derby has been general manager of foreign operations, Western Hemisphere and West Africa, since 1957. Dodge, with Texaco since 1920, was named manager of foreign sales in 1944. After that, he became general manager of foreign operations, Western Hemisphere and West Africa. In 1956, he was elected vice-president of that department.

T. G. Kelliher

H. H. Neel

HENRY H. NEEL is the new manager of foreign exploration and production for Tidewater Oil Co., in Los Angeles, and **T. G. KELLIHER** succeeds him as manager of domestic exploration. Kelliher moves to Los Angeles from Houston where he was manager of exploration for Tidewater's southern division. Neel, with Tidewater since 1942, became western division exploration manager in 1955. In 1957, he was named foreign exploration manager, and later that year, became exploration manager for domestic operations.

SYDNEY WIRE has been named assistant general manager of Esso Standard Oil Co.'s marine department, in New York. He was formerly general manager of Esso's inland waterways department, which recently became the inland waterways division of the marine department. At the same time, **Michael F. Spellacy** becomes manager of the inland waterways division, and **Roland V. Baillie** becomes assistant manager. Spellacy was most recently manager of the business administration division of the inland waterways department. Baillie, with Esso since 1933, became manager of that department's western rivers division office in 1955. He transferred to inland waterways headquarters in New York in 1957.

PAUL D. BALBIN moves up to general manager of Chaco Petroleum S.A., Bolivian subsidiary of Tennessee Gas Transmission Co. Balbin, who has been chief geophysicist for Chaco since 1958, will be located in Cochabamba.

EUGENE HOSFORD is the new operations coordinator for domestic production for Gulf Oil Corp. He transfers to Houston from Ft. Worth where he has been division production coordinator. Hosford succeeds **N. C. Simpson,** who was recently elected an administrative vice-president and coordinator.

E. Hosford

F. W. Heiser

F. W. (Ted) HEISER has been appointed manager of the newly formed Mid-Continent region in Denver, for Colorado Oil & Gas Corp. The new regional division office will supervise the company's operations in the Mid-Continent and Rocky Mountain areas. Heiser was most recently assistant manager of drilling and production at Denver. He has been with Colorado since 1954, when it acquired Derby Oil Co. He was assistant to the president of Derby at that time. **Hugh Wingerter,** formerly Colorado's geologist at Liberal, Kan., has been transferred to Denver as regional exploration manager for the Mid-Continent region.

EDDIE G. DURRETT is vice-president in charge of the West Texas-New Mexico division, at Odessa, and **HAROLD J. MAGNER** vice-president in charge of the Northeast division, Pittsburgh, Delta Drilling Co. Durrett joined Delta in 1952 as drilling superintendent in West Texas, and was later promoted to manager of that division. Magner has been manager of the Northeast division in Pittsburgh, Pa.

MARK E. NIDER is the new assistant superintendent of the communications division of Natural Gas Pipeline Co. of America and its affiliates, in Chicago. Nider, with the organization since 1950, was most recently chief communications engineer.

CHARLES R. BELL, Continental Oil Co., Houston, has been elected chairman of the 25th annual tax forum of the Mid-Continent Oil & Gas Assn. He succeeds **R. V. Miller,** Shell Oil Co., New York. **W. J. Crawford,** Humble Oil & Refining Co., Houston, has been elected first vice-chairman of the forum, and **James W. Baldwin,** Cities Service Oil Co., Bartlesville, Okla., has been elected second vice-chairman.

GORDON I. ATWATER, New Orleans consulting geologist, and **BEN H. PARKER,** Frontier Refining Co., Denver, are candidates for the 1960 presidency of the American Assn. of Petroleum Geologists. **Frank B. Conselman,** consulting geologist at Abilene, will oppose **Mason L. Hill,** Richfield Oil Corp., Los Angeles, for the vice-presidency. **Louis H. Luckert,** Texaco Inc., Houston, is a candidate for secretary-treasurer, and his opponent is **George V. Cohee,** U. S. Geological Survey, Washington, D. C. Balloting will be by mail, and the new officers will be installed at the AAPG annual meeting next Apr. 28, in Atlantic City, N. J.

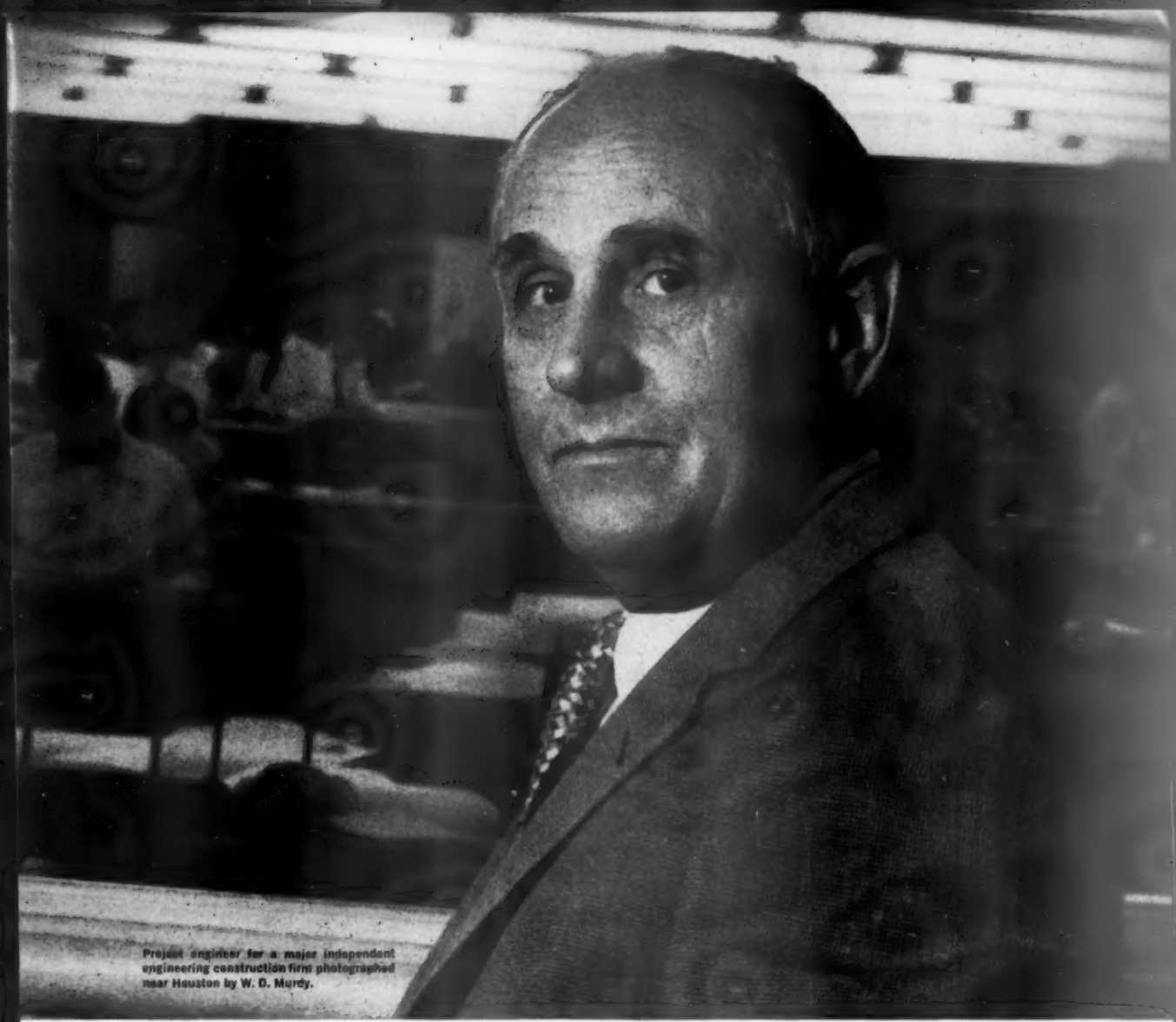
KARL D. EMERSON has been elected president and a director of Portland Pipe Line Corp., Portland, Me., and Montreal Pipe Line Co., Ltd. Emerson succeeds **Frederick G. Schultz,** who is retiring. At the same time, **Franklin W. Abbott** was elected treasurer of Portland Pipe Line, succeeding Emerson. Emerson joined Portland Pipe Line in 1951 as treasurer and assistant secretary. He was named assistant to the president in 1956, and, two years later, was elected vice-president and treasurer.

FRANK FLOREN is head of Enjay Co.'s new West Coast district office, at Los Angeles. He joined the company's technical service division in 1948, and transferred to industrial sales with an affiliated company in New York in 1951. He joined the butyl division in 1955, and moved to the Chicago office as technical representative that same year. In 1957, he became polymer supervisor in the Western division. **Gene Huxley,** who has been handling polymer sales in Los Angeles, has been assigned to Chicago as polymer sales supervisor there.

F. Floren

C. C. Garvin, Jr.

CLIFTON C. GARVIN, JR., becomes assistant general manager of the supply department for Esso Standard Oil Co., New York. Garvin joined Esso in 1947 as an engineer in the Baton Rouge refinery process engineering department. He was most recently operating superintendent of the Baton Rouge refinery.



Project engineer for a major independent engineering construction firm photographed near Houston by W. D. Murdy.

One of a series of portraits of oil industry management and operating men.

What's in Petroleum Week for a Project Engineer?

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DEPT/Service & Equipment Companies

E. F. Stratton

C. K. Ruddick

EVERETT F. STRATTON becomes executive vice-president, and **CHARLES K. RUDDICK** succeeds him as vice-president in charge of operations, for Schlumberger Well Surveying Corp., Houston. Stratton, with Schlumberger since 1936, served as sales manager in Houston from 1946 to 1949. In 1949, he became Rocky Mountain area manager in Denver, and the next year, moved back to Houston as manager of the Southwest area. In 1956, he was promoted to vice-president of operations. Ruddick was most recently Schlumberger's manager of the Southeast area, in New Orleans. Before that, he was area manager of the Mid-Continent area, with offices in Tulsa.

CLARK RANKIN has been elected a vice-president of Bechtel Corp., San Francisco. Rankin, with Bechtel for 25 years, was involved in the construction of the Iraq Petroleum Co. pipeline from Kirkuk, Iraq, to the Mediterranean Sea. Presently, he has general responsibility for Bechtel subsidiaries in Paris, London, and The Hague.

OIL FIELD SALES & SERVICE, S.A., a subsidiary of U.S. Industries, Inc., is the new sales and service representative in eastern Venezuela and Colombia for the Waukesha engine line of Waukesha Motors, Ltd., Waukesha, Wis. **Delmar Schmidt,** formerly field service engineer with Waukesha in Tulsa, has joined Oil Field Sales as head of the engine field maintenance staff, with offices in Anaco, Venezuela. In this position, Schmidt will coordinate servicing and maintenance of Waukesha engines.

J. S. (Dutch) GEORGE has been appointed special representative in Tulsa, for American Iron & Machine Works Co. George was associated with Hughes Tool Co., before joining American Iron.

J. S. George

F. Jackson

FRED JACKSON moves to Liberal, Kan. as a salesman for the Baash-Ross Division of Joy Mfg. Co., and **Joe F. Bealer, Jr.**, replaces him as Baash-Ross salesman in Casper, Wyo. Bealer was formerly associated with American Mfg. Co. of Texas, Ft. Worth. **Leon McRae Gay** joins Baash-Ross as a salesman in Odessa. He was formerly co-owner and manager of Texas Rental Tools, in Odessa.

WILLIAM C. DILLER has joined Fritz W. Glitsch & Sons, of Dallas, as district sales manager for the company's new regional office in Charleston, W. Va. Diller has been associated with the chemical process industry in the Charleston area for

H. C. OTIS, center, chairman of Otis Engineering Corp., Dallas, newly acquired subsidiary of Halliburton Oil Well Cementing Co., Duncan, Okla., is a new director of the parent company. Two Halliburton executives seated with Otis are: **Logan D. Campbell,** left, chairman of the board, and **L. B. Meaders,** right, president.

the past nine years. Glitsch manufactures fractionation trays and pressure vessels for the petroleum refining and chemical processing industries.

F. H. CREGER has been named vice-president of the new marine division of American Marc, Inc., Inglewood, Calif. He was most recently president of Creger Marine, boat manufacturer, which was recently acquired by American Marc. The facilities of Cregar Marine have now become American Marc's marine division.

GUY A. LEWIS becomes assistant district engineer, machinery and equipment sales and service, at Los Angeles for U. S. Steel Corp., Oil Well Supply Division. Lewis, with the division since 1947, was most recently located in Ventura, Calif.

W. W. WIBEL becomes director of a new corrosive engineering division, recently formed by Maloney-Crawford Tank & Mfg. Co., Tulsa. Wibel was formerly sales manager for Chemical Marketing & Manufacturing Corp., Chicago.

W. W. Wibel C. B. Caldwell

CHARLES B. (Chuck) CALDWELL has been named division manager of the West Texas area for Reed Roller Bit Co., with offices in Odessa. He joined Reed earlier this year, as regional representative for the Gulf Coast area, with headquarters in Houston. He has also served in a sales capacity with Mid-Continent Supply Co., and as president of Harrisburg Sales & Service Co.

WILSON SUPPLY CO. has acquired Ft. Stockton Pipe & Supply Co., in West Texas. **William Sallee** will manage the Ft. Stockton operation for the company.

BILL PHILPOTT transfers from Midland to Ft. Worth as vice-president of Womack-Snelson Advertising, and as head of the agency's new office there. He has been an account executive with the agency for the past four years. Womack-Snelson specializes in oil industry advertising.

BILLY D. MILLER and **DOYLE E. DUMAS** have joined Tretolite Co., division of Petrolite Corp., as field service engineers. Miller, formerly sales representative with National Supply Co., will be located at Monahans, Tex., and Dumas, formerly with Pacific Pumps, Inc., will be located at Lake Charles, La. **Harold L. McDonald**, formerly with Mid-Continent Supply Co., is now field service engineer at Alice, Tex. **Harlin L. Shields**, previously with Lane-Wells Co., one of the Dresser Industries, succeeds **Bill Campbell** as field service engineer at Plainville, Kan. Campbell has transferred to South America as field service engineer for South American Petrolite Corp. **Robert J. Weber**, with Douglas Aircraft Co., Tulsa, for the past six years, has joined the Tretolite service staff at Cushing, Okla.

FRONTIER PERFORATORS, INC., Pampa, Tex., is a new member of the Petroleum Equipment Suppliers Assn. PESA is composed of companies engaged in petroleum equipment, supply, and service operations.

J. A. Whitesides C. Spitzfaden

CHARLES SPITZFADEN has been appointed general manager of sales, non-tubular, for Continental-Emsco Co., Dallas, and **J. A. WHITESIDES** succeeds him as manager of C-E's drilling equipment sales department. Whitesides was formerly sales and development engineer, drilling equipment. In his new position, Spitzfaden will be in charge of all C-E non-tubular sales departments.

Z. B. DEER, JR., is the new sales engineer in the Texas-Oklahoma panhandle area for Clark Bros Co., one of the Dresser Industries. He was formerly chemical division supervisor for Celanese Corp. of America.

DAN L. McGURK moves up to sales manager of Thompson-Ramo-Wooldridge Products Co., Los Angeles, and **Louis B. Perillo** succeeds him as contracts and proposals manager in the company's marketing division. At the same time, **Henry L. Bechard** was advanced to the newly created position of products manager of that division. Four TRW sales engineers have been promoted to regional sales managers. They are: **Richard M. Hexter**, eastern region, with offices in New York; **Rigdon Currie**, southwestern region, Houston; **Ray J. Stanish**, central region, Chicago, and **William O. Paine**, western region, Los Angeles.

JONES & LAUGHLIN STEEL CORP. has made three personnel changes in its general sales office and tubular products division. **Russell F. Derr**, formerly assistant general manager of sales in the Detroit territory, moves to Pittsburgh to assume sales responsibilities there. **Edwin A. Booth**, manager of tubular products, in Pittsburgh, has been appointed assistant general manager of sales in Pittsburgh. **Roger H. Martin**, formerly assistant manager of tubular products, succeeds Booth as manager of tubular products.

SEARCHLIGHT SECTION

(Classified Advertising)

EMPLOYMENT EQUIPMENT — USED OR RESALE — BUSINESS OPPORTUNITIES

DISPLAYED RATE
EQUIPMENT & BUSINESS OPPORTUNITY advertising $16.75 per inch.
EMPLOYMENT OPPORTUNITIES — $20.00 per inch, subject to Agency Commission.
UNDISPLAYED RATE
(Not available for equipment advertising) $1.50 a line, minimum 3 lines.
POSITIONS WANTED undisplayed rate is one-half of above rate, payable in advance.
Box Numbers—Count as one line.
Discount of 10% if full payment is made in advance for 4 consecutive insertions.

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SAN FRANCISCO 4: 68 Post St.

POSITION WANTED

Materials Supervisor—Age 35, Married. Experienced in Organizing, managing, administration and procurement of materials for drilling, production and exploration operations. Experienced in coordination of materials. Twelve years domestic and foreign experience, presently employed. Desire top level position with progressive and expanding organization. References and complete resume available. PW-2061, Petroleum Week.

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Government Can't Guarantee Profits

IMPORTERS HAVE USED MANY REASONS to support their requests to the Oil Import Appeals Board for an increase in allocations. Undoubtedly most are based on sound facts.

But in some instances, we frankly doubt the arguments used.

And these are the growing number of appeals that fall into two categories:

- Domestic crude is no longer suitable to refiners.
- Import restrictions are the cause for a loss of profits.

Time was—and it wasn't too many months back—when most of the appellants using those arguments ran domestic crude entirely in their refineries.

It must have been of good quality, since the companies sold their products in a competitive market. And since those companies are still in business, they must have made a profit.

But suddenly, or at least since last Mar. 11 when the mandatory plan became effective, U.S. crude seems to have suffered a strange loss in quality.

With all of the unsatisfactory quality reasons given, it is surprising that the nation's automobiles were able to chug along for so many years on what apparently was unsuitable gasoline. And it is amazing that the population that had to depend on heating oil from domestic crude was able to survive the rigors of some rough winters.

UNTIL NOW, WE MADE DO with the best we had. The military services during two major wars and a few lesser skirmishes somehow managed to operate planes, ships, and tanks on the fuel derived almost entirely from domestic crude.

Also until now, the U.S. oil companies managed to survive without an unusually high business mortality rate by facing up to the hard facts of life. No one has ever been assured of a profit in a business venture.

The mandatory imports control plan was not designed to guarantee a profitable operation to anyone—producers or refiners. The purpose was in the interest of national security.

And it is doubtful that any business man would expect the government to guarantee him a profit when national security is involved.

After all, it is not the function of government in a free-enterprise economy to guarantee any business a profit.

Only BJ offers you a full line of protectors!

...allowing you to match protectors to your job requirements!

NEW GRIP-LOK—Now BJ introduces Grip-Lok...the new, economy model latch-on protector with locking pin. Grip-Lok extends the use of time and labor saving latch-on protectors to applications that had previously been unfeasible...actually cost less than stretch-on types where removal and reinstallation costs are involved! Economical Grip-Loks allow double-rubbering of pipe in crooked hole...can be used on the full string in many shallow and medium depth wells. Grip-Loks will not move or come loose in use...can be installed or removed by your crew in less than 10 seconds!

PREMIUM-GRADE SAFE-LOK—BJ's finest latch-on protector...featuring a longer body with more rubber for maximum bearing surface. Thanks to patented cam lock construction, they can be easily installed in 8-10 seconds by regular crews, using a simple wrench. Use versatile Safe-Loks on top hole pipe...as rotary hose protectors, Kelly Sub protectors and stabilizers, bumpers, cushions and other applications. They pay for themselves in rig time saved!

ECONOMICAL STRETCH-ON TYPE—BJ Stretch-On Protectors have been a standard in the world's oil fields for more than 30 years. Formulated to strictest standards by BJ engineers, they are designed to provide the longest service life for the smallest investment per stand of pipe. Your choice of Regular Protectors... Oil-Resistant Protectors...and Polar Protectors for cold weather use. BJ field warehouses and crews provide fast, efficient installation and removal service.

New 6-page illustrated Bulletin gives details and specifications on BJ's full line of drill pipe and casing protectors. Write today for your copy!

BYRON JACKSON TOOLS, INC.

A subsidiary of Borg-Warner Corporation

P. O. Box 2017-A, Terminal Annex, Los Angeles 54, California

Export Address: 580 Fifth Avenue, New York, N. Y.

How Timken® steel became a string saver

YOU probably recognize the steel parts below as tool joints that hold together a string of drill pipe. Deep hole drilling puts a terrific strain on these joints. And a break is costly in both time and money.

Manufacturers came to Timken Company metallurgists to solve their breakage problem. Our experts studied the problem and recommended a special analysis of Timken seamless steel tubing.

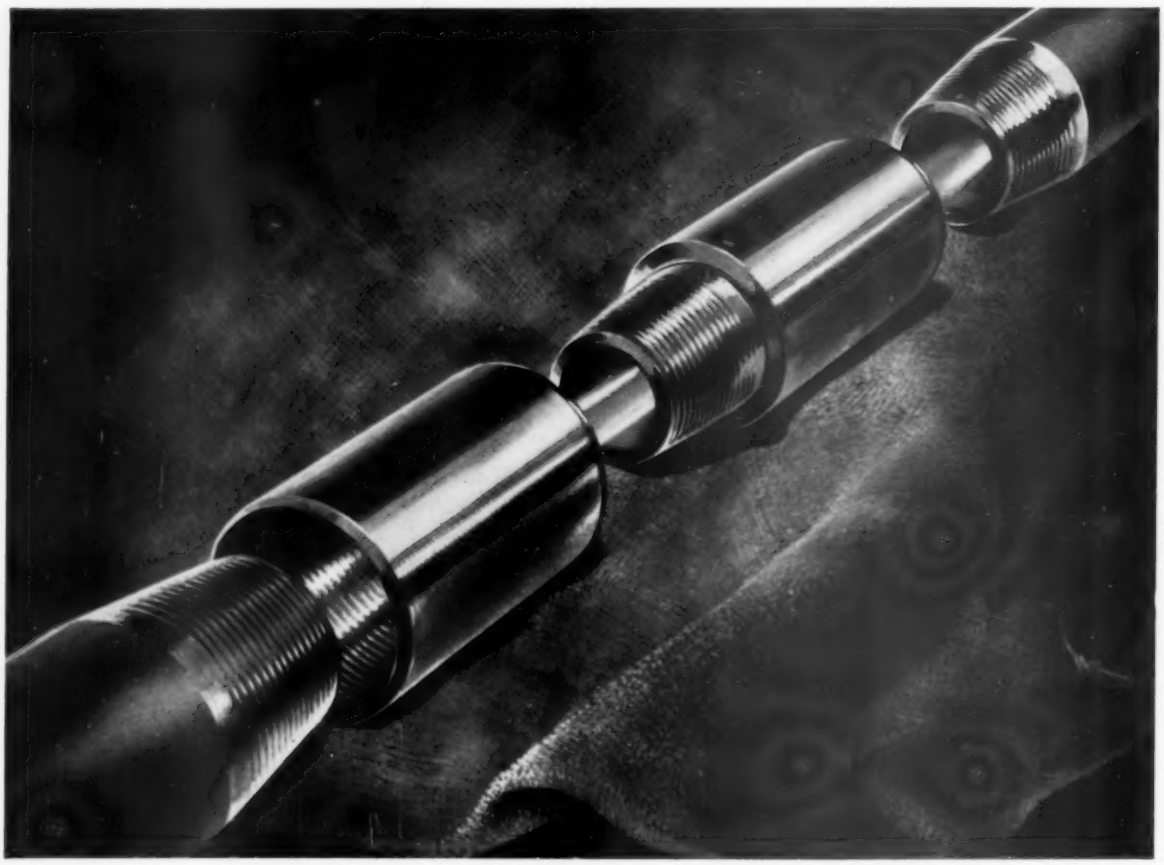
The manufacturers tested it. They found the refined grain structure and spiral grain flow of the Timken tubing gave joints the fine forged quality they need to resist string failure. Big economies in time and money resulted.

You'll also find Timken steel the most economical you can use for high-strength casing, drill collars, pumps, and refinery tubes and piping. Whatever the application, Timken steel tubing cuts production time and material costs—the hole's already there!

We've even developed a new high-strength oil well tubing that offers a yield strength up to 125,000 PSI —20% stronger than the stiffest API spec, 5A. Whatever your steel problem, Timken Company metallurgists are ready to help you solve it. Why not give them a call? The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable: "TIMROSCO". *Makers of Tapered Roller Bearings, Fine Alloy Steels and Removable Rock Bits.*

WHEN YOU BUY TIMKEN STEEL YOU GET:

1. Quality that's uniform from heat to heat, bar to bar, order to order
2. Service from the experts in specialty steels
3. Over 40 years experience in solving tough steel problems



TIMKEN® *Fine Alloy* STEEL

TIMKEN ALLOY STEEL AND SEAMLESS TUBING IS AVAILABLE FROM WAREHOUSE STOCK IN 44 CITIES IN THE UNITED STATES